GAS JOURNAL, JUNE 26, 1940

VOL. 230 92nd YEAR No. 4023

EDITORIAL NOTES

CONTROL OF IRON CASTINGS

WHEN the supply and use of essential raw materials came under Government control at the outbreak of hostilities it was realized that the controlling machinery would have to be adjusted from time to time, either in the light of accumulated experience or to meet changing circumstances arising from fluctuations in the needs of the fighting forces. In the case of iron and steel there has been a succession of revised Control Orders, and, as readers of the "JOURNAL" are aware, an entirely new method of allocation came into operation under the Steel Distribution Scheme introduced last month. The aim of the scheme was to ensure an equitable distribution of the available supplies of steel among the various industries, which were grouped under the control of appropriate Government Departments possessing specialized knowledge of those industries. The steel requirements of the Gas Industry came under the care of the Department of the Director of Gas Administration, and since the appointed date all applications for steel allocations for gas-works plant and equipment have been dealt with by that Department, gas undertakings themselves making the applications on behalf of the contractors in the case of plant, and the manufacturers applying direct in the case of appliances. The scheme has worked well and the Department has established a proper balance between essential and, shall we say, less essential requirements.

The scheme so far has been confined to steel, but similar arrangements have now been made in respect of iron castings. A few days ago the Iron and Steel Control notified all ironfounders that it had become necessary in the present emergency to stop the use of pig iron (hæmatite in particular) and scrap for making iron castings for unessential uses. This applied equally to stocks of pig iron and scrap as it did to fresh supplies, and the ironfounders were warned that all licence applications must give complete details of the articles it was proposed to manufacture or the purposes for which the iron castings were required. They were told plainly that stocks must be used only in the national interest. A further communication from the Iron and Steel Control made it clear that iron castings for the use of public utility undertakers for repair and maintenance work were not included in the definition of "unessential castings," but that, apart from the short list of exemptions, all unmachined castings should be purchased under licence.

Having regard to the success of the Steel Distribution Scheme it was obviously an advantage to all concerned to place the control of iron castings on a similar basis, and it has therefore been announced that all applications for iron castings allocations for the Gas Industry shall be dealt with by the Director of Gas Administration, Board of Trade, 26, Chapter Street, London, S.W.1. Applications should be accompanied by full particulars of the tonnage required and the purpose for which the castings are proposed to be used, and the same procedure will be observed as in the case of steel—namely, that for major requirements for plant and equipment generally the gas undertaking, and not the contractor, will make the application, while for appliances generally the manufacturers themselves will apply. The Department will deal with the applications on their merits and issue certificates for the allocation of the castings. The undertakings, contractors, or manufacturers requiring the castings will present the certificates to their suppliers, who may have to get licences for their supply of pig iron, which they will do by applying to the Ministry of Supply, presenting either the certificates or quoting the reference numbers. By controlling iron castings in this way the Department is virtually also controlling pig iron.

It has already been mentioned that iron castings required by gas undertakings, as public utilities, for works of repair and maintenance, are exempt from the licensing regulations, but it is clear that the work of the Department will be facilitated if it is placed in possession of as complete a picture of the Industry's requirements as is possible, and it has been requested that details of repair and maintenance requirements should be communicated to the Department. When all is said and done, the greater the measure of co-operation between the Industry and the Department the greater will be the success of the scheme. There are two points about the scheme that are worthy of emphasis. First, the concentration of these matters in the hands of the Director of Gas Administration has the great advantage of making it possible to obtain a balanced supply of raw materials, which might well not be so if applications for such essential needs had to be made to different controllers; secondly, that, very wisely, official recognition is being given to gas as a public utility by appliances as well as plant and equipment all being brought under the same control. In the result the Industry is being placed in a position where such of its services as are regarded as essential to the life of the community are being maintained, and there is every prospect of such requirements as can be regarded as reasonable in the present emergency being met.

It seems to us that what has been done in the case of iron and steel might with equal advantage be done in connexion with the non-ferrous metals, applications for which at present have to go through other channels where there is possibly not quite so keen an appreciation of the national importance of the Industry. The greater the measure of co-operation that can be effected, the more easily will the Industry be enabled to maintain its essential services.

STOCKING COKE

IN a statement issued last week the Secretary for Mines urged upon all consumers——industries, public utilities, and householders—the desirability of stocking now, as far as possible and practicable, supplies of solid fuel to meet at least in part their requirements for the coming winter. Generally speaking, no restrictions as to quantities are imposed, and there can be no doubt that in their own and the national interests householders will act on the Government's recommendations. Experiences of last winter will not readily be forgotten and will doubtless act as incentive to compliance with the request. Likely public demand for coke during the coming few months—and the demand, we know, will be heavy—can only be smoothly met by gas undertakings themselves having adequate stocks, and it is in this regard that once again we must rely upon co-operative action within the Industry, acting in concert with oven coke producers, to provide a satisfactory solution to the problem. And again it is fortunate that machinery exists whereby plans for the most economical distribution of available supplies can be speedily formulated. We have no doubt that ways and means are at the moment being considered within the Industry and in consultation with the Ministry of Mines of how best to ensure the provision of adequate coke stocks throughout the whole of Great Britain.

In some parts of the country, notably in the South of England, stocks are low, below the amount needed to cope with likely demand. In certain other parts of the country adequate supplies are available. Cessation of export of coke to the Scandinavian countries and to France will, of course, react to ease the situation in regard to replenishment of depleted stocks, but it is evident that co-operation between gas undertaking and gas undertaking on a common and agreed

policy is needed. Such matters as transport costs of coke from one area to another and the incidence of such costs on the ultimate price of coke to the consumer will have to be considered, and it is to be hoped that some agreement in general form will be reached. Then there is the question of the relative storage facilities available on the premises of gas undertakings. These and other matters, however, we are sure will be settled in such a way through existing organizations as to cause a minimum inconvenience and to result in a maximum benefit to all concerned. As we have said, it is indeed fortunate that machinery, the effectiveness of which has been well proved in other directions both before and since the outbreak of war, exists for the purpose.

STANDARDIZATION

FOR years we have been urging in these columns that the Industry must get together to make effective a greater measure of standardization of gas fittings, equipment for supply, and gas consuming apparatus. It is so obvious that this would result in benefit alike to the supplier of gas, to the manufacturer of apparatus, and to the gas consumer; and surely war conditions have brought more insistent need for such action. It is a fact that, generally speaking, little serious attempt has been made to solve the problem by gas undertakings in co-operation with the manufacturers. It is not that we wish to see a rigidity, in working to specification, which would act as a brake to enterprise. New development work translated into practice is essential to progress. But gas undertakings on the one hand ask for appliances and apparatus of all types at low cost, and on the other hand indulge in individual requests for slight modifications in a given design. The majority of these modifications have no bearing on the efficiency of the appliance in the consumer's premises, the while they add to manufacturing difficulties and costs. In brief, these demands, which for the most part fall into the category of personal whims, defeat the effort made to keep down costs; elimination of the demand for finicky variations is long overdue.

The position in regard to meters, taking a particular instance, cries out for drastic revision. We refer to this specifically in view of the Institution Paper by Mr. Haynes ("JOURNAL" of June 12). Think of the sizes which have to be stocked by manufacturers to meet the requirements of gas undertakings. Lights type, standard, high capacity, small high capacity, in their various sizes, each stocked as open top meter and closed top meter. Add to the list prepayment meters in these types which have to be stocked as single coin meters at 1d. and 1s., duo-coin at undertaking's option, and optional at consumers' option. This can hardly be counted as making for efficiency and economy. As mentioned by Mr. Haynes—we referred to this in the "JOURNAL" of June 12—it is nearly twenty years since the standard meter was recommended, since the idea of standardization was pressed. But the Gas Industry as a whole did not accept or act upon the recommendation. The standard meter was followed by the high capacity and by the small high capacity, and in 1935 came the Institution Specification for Gas Meters for Domestic Consumers. Again the specification has not been accepted by the whole of the Industry. All these efforts at standardization have met with little success. Could not a system be arrived at among the meter manufacturers whereby appropriate extra prices should be charged for departures from recommended practice? If any undertaking requiring special features in meters was called upon to pay shillings more per meter, the demand for these features would not, we think, be what it is to-day.

Just as adherence to standards would lower the first cost of meters to gas undertakings, so would adherence to rated capacities and attention to their working on the district lower costs per therm of gas registered. Overloading of meters cannot be regarded as an uncommon practice. As the pressure absorption through a meter increases, the registration tends to become slow. Overloading means higher absorption and lower accuracy of registration, which means some loss of gas revenue. With a new meter, the loss may be small, but with an old meter the loss may well be severe. Neglect of lubrication, too, leads to increased pressure loss in meters and hence again to loss of revenue. It is not enough to satisfy oneself that the lubrication is all right when the meter is installed in the consumer's premises. Oiling should be carried out at regular intervals, and the attention is simple enough. If a small oil gun is added to the equipment of the maintenance fitter, regular lubrication could be carried out in a few moments. The cost of doing this would be more than repaid by preventing slow registration, by saving of expenditure on meter charging, and by lengthening the life of the meters. The table given by Mr. Haynes setting out examples of losses due to neglected lubrication should be sufficiently convincing on this point. The recommendations he put forward should indeed engage the attention of all gas engineers, for they have a direct bearing on the financial success of gas undertakings. If one examines the amount of capital expended on meters by gas undertakings it is, as Mr. Currier, of Bradford, mentioned in a written contribution to the discussion on the Paper, surprising to find what little technical supervision is available and to what a minimum statistical details are reduced.

Wartime Street Lighting

Much progress in regard to the adoption of wartime street lighting has been made in Sheffield, where already 16,000 of the new fittings are installed. It is anticipated that the remaining 8,000 street lamps will be similarly treated by the end of July. The results have proved very satisfactory. The current issue of *Light and Lighting* refers to a recent meeting of the Sheffield Safety First Council when a resolution was passed expressing appreciation of the speed and efficiency with which the modified street lighting has been installed, and affirming its value to road users in mitigating blackout conditions. As our contemporary remarks, where the lighting is installed on a large scale there is usually no doubt in regard to its benefit. The appreciation of the public amounts to heartfelt gratitude. Where, on the other hand, the system is only applied to a few streets, or perhaps even only to a section of one street, its value is not so evident, and there is some danger of an erroneous impression that it is not worth while.

Forthcoming Engagements

June.

28.—Waverley Association.—General Meeting, North British Station Hotel, Edinburgh.

July

5.—Manchester District Association.—Visit to Stockport.
13.—Western Juniors.—Summer Meeting at Minehead.

August.

13.—Irish Association.—Annual General Meeting at Dublin.
24.—Scottish Western Juniors.—Paper by J. Fulton on "Ammonia Recovery."

Revised Schedule of Reserved Occupations

The Revised Schedule of Reserved Occupations contains a number of modifications which affect those engaged in various branches of the Gas Industry. It is obtainable from H.M. Stationery Office at York House, Kingsway, W.C.2; 120, George Street, Edinburgh, 2; 26, York Street, Manchester, 1; 1, St. Andrews Crescent, Cardiff; 80, Chichester Street, Belfast; or through any bookseller. The price of the schedule is 1s. net.

Gas undertakings will be well advised to purchase a copy of this schedule, and if there are any questions of doubt in connexion with the occupations reserved, the National Gas Council will be pleased to deal with enquiries.

B.B.C. Cookery Talks

During the next few weeks, the regular B.B.C. talks at 10.45 a.m. on Tuesdays in the Kitchen in Wartime series will be linked with the Food Education campaign. The talks will be on subjects which are being shown in local demonstrations. The first few talks will be on the salads, vegetables, and fruits coming into season, their place in dietary and the methods of using them. Weekly insertions in the advertisement columns of the newspapers will emphasize the crops which are coming into good supply.

It is hoped that the broadcast talks will be of assistance to local demonstrations. If audiences are encouraged to listen to them and then attend the demonstrations, they will see the subjects developed practically. In addition, references to Food Education subjects will be included from time to time in a new regular series of five-minute broadcasts on food questions at 8.15 a.m. daily. They will be included in other B.B.C. talks as opportunity offers.

Personal

Among those posted as missing after the retirement from Dunkirk is 2nd Lieut. W. J. A. GRAY, A.M.Inst.C.E., son of Mr. J. A. Gray, Engineer, Manager, and Secretary of the Ashton-in-Makerfield Urban District Council Gas Department.

* * *

The Caledonian Gas Corporation, Ltd., reports that owing to his appointment as Financial Secretary to the War Office, Mr. R. K. Law, M.P., has been obliged to resign from the Board of the Corporation, and from the Boards of a number of its constituent companies. Mr. WALTER MUTER, J.P., and Mr. WILLIAM WILSON, have also resigned from the Directorate.

* * *

On leaving to take up his new appointment as Deputy Engineer and Manager to the Devizes Gas Department, Mr. C. M. SMITH was presented with an oak bookcase by his colleagues at Barnoldswick. The presentation was made by Mr. H. Spencer, Engineer and Manager to the Barnoldswick Urban District Council Gas Department, to whom Mr. Smith has been technical assistant.

* * *

Mr. A. H. SLADE, Commercial Assistant at the Halifax Corporation Gas-Works, has been recommended for appointment as Secretary to the Stockport Gas Department. There were 22 applicants. Mr. Slade went to Halifax in July, 1938, from the Glasgow Corporation Gas Department, where he had been 23½ years. He was educated in Glasgow at the North Kelvinside School, the Royal Technical College, and the School of Accountancy, Glasgow. He is an Associate of the London Association of Certified Accountants.

* * *

B.C.G.A. Personnel

The British Commercial Gas Association has assisted Government Departments by releasing for service in a number of Ministries some of its officials with specialized knowledge.

At the request of the Ministry of Home Security, the Association has seconded its Manager, Mr. W. D. Rowe, for special duties in connexion with civil defence.

The Association has also temporarily lost the services of Mr. S. C. Leslie as Chairman of its Publicity Committee, for the Gas Light and Coke Company has lent Mr. Leslie to the Ministry of Supply, to which he has been appointed Public Relations Officer. Mr. S. E. R. Wynne, B.C.G.A. Press Officer, has been released to act as Press Officer at the Ministry of Supply.

Mr. T. Baird, the Association's Film Officer, was released earlier this year for duty in the film section of the Ministry of Information. Miss H. de Mouilpied, whose services were lent to the Association by the Gas Light and Coke Company to carry out Mr. Baird's duties, has also been seconded to the Ministry of Information.

The future work and policy of the Association in relation to the present war situation was reviewed by the Emergency Executive Committee at their meeting on June 18, and a communication will shortly be sent to all B.C.G.A. members. During the absence of the Manager of the Association, his work will be taken over by the Secretary.

Institution of Gas Engineers Medallists

Owing to the postponement of the 77th Annual General Meeting it was unfortunately not possible for the President of The Institution of Gas Engineers personally to present the undermentioned Institution Medals.

The medals have, however, now been despatched to the respective recipients and it is hoped that it will be possible to present the medals in person and in the presence of members of the Institution at the postponed 77th Annual General Meeting which it is intended to hold later this year.

Institution Gold Medal, 1939 :

Awarded to Walter Grogono, M.I.Mech.E., M.Inst.Gas E. (Croydon), and T. Campbell Finlayson, M.Sc., M.I.Chem.E., M.Inst.Gas E. (London), for the Joint Paper, "The Test Installation of Static Vertical Retorts at Croydon Gas-Works," read at the 76th Annual General Meeting of the Institution, in London, on June 6, 1939.

H. E. Jones London Medal, 1939 :

Awarded to Cyril M. Croft, D.L., J.P., M.Inst.C.E., M.I.Mech.E., M.Inst.Gas E. (London), for the Paper "Installation of Tower Gas Purifiers," read at the 76th Annual General Meeting of the Institution, June 8, 1939.

Institution Silver Medal, 1939 :

Awarded to Norman Hudson, M.Inst.Gas E. (Mirfield), for the Paper "Total Sulphur Below 10 grains per 100 cu.ft. Practice and Results on 140 million Works with the Oil Washing Process," read at the General Meeting of the Manchester District Association of Gas Engineers at Manchester on Oct. 20, 1939.

Institution Bronze Medal, 1939 :

Awarded to F. Cartledge (Oldham) for the Paper "Coal and Coke Handling Plant at the Higginshaw Gas-Works, Oldham," read at a Meeting of the Manchester and District Junior Gas Association at Oldham on May 6, 1939.

NEWS OF THE WEEK

The Annual Gas Education Conference provisionally arranged for Tuesday, July 16, has been cancelled owing to the present international situation.

On the Installation of Gas Fires in 114 bungalows on the Whinney Banks and Brambles Farm Estates, the Middlesbrough Town Council is to spend £500.

There Being no Urgent Business to transact and in view of the present international situation, the Meeting of the Chairmen's Technical Committee of The Institution of Gas Engineers, provisionally arranged for June 28, at 2.30 p.m., is cancelled.

A Well-Known Catering and Baking Firm at Largs (Messrs. Castlesons, Ltd.) have intimated to the local Town Council their intention of operating in future their cooking and heating systems and dish-washing machines by gas instead of by crude oil.

Sanction has been Granted to the Middlesbrough Town Council to borrow £20,035 in respect of mains and £1,410 for a meter in connexion with the coke oven gas supply from Messrs. Dorman Long & Co.'s Grangetown Works. The work has been put in hand.

Under the Auspices of the Alloa Corporation Gas Department, wartime gas cookery demonstrations were given by Miss R. Pullen, 1st Class Cert. Dom. Sc. (Bath), of Radiation Research Kitchen, in the Gas Showroom, Alloa, twice daily during the week June 3 to 7.

The Services of Mr. J. P. Stevenson, the Coal Utilization Joint Council's Area Combustion Engineer in Ireland, have been loaned to the Mines Department for Government work in Scotland. The Dublin office of the Council is, therefore, being closed, and any communications in connexion with the Council's work in Northern Ireland or Eire should be addressed to the C.U.J.C. Head Office in London.

Viscount Astor, Lord Mayor of Plymouth, visited the Corporation Gas-Works at Devonport on June 14 for the purpose of interesting the employees in the Services Welfare Fund which he recently inaugurated. After hearing what his lordship had to say one of the men spontaneously moved and another seconded that there should be a 3d. per week deduction from the wages of all as a contribution to the Fund, and this was agreed to with complete unanimity.

Encouraging Figures from Cambridge

In the current issue of the Cambridge University and Town Gas Light Company's *Bulletin* some encouraging results are given of sales initiative—showing what can be achieved by sales staffs who energetically face up to the new conditions. Here are the figures for the past three years, brought up to the end of May:

	1938	1939	1940
Cookers	347	302	328
Fires	414	445	494
Water Heaters	217	252	166
Refrigerators	10	28	10
Wash Boilers	95	82	55

Gas sales, excluding public lighting, to the end of March increased from 266 million cu.ft. to almost 300 millions.

The Cambridge Company are also giving full support to the National Food Campaign. It was actually two days before the "Fitter though Rationed" campaign was officially inaugurated that the first series of demonstrations and film shows opened in the Company's lecture theatre. The whole programme was planned to assist, instruct, and advise the local housewife in her cooking problems, which are not made easier by the war. Nor was the response half-hearted, for on the first Wednesday afternoon, "House Full" notices had to be posted, and up to the end of May no fewer than 400 attendances had been recorded. The demonstrations are being conducted by Miss M. Ebden, and through her good offices difficulties of wartime meals have been solved in many Cambridge homes.

Family Recipes for Wartime

Although the modern woman is beset by many cooking problems in wartime, she is fortunate in having so much valuable help from experts who are doing everything in their power to overcome difficulties for her. To assist in the search for nourishing and appetising meals, and having regard to rationing and economy, Radiation, Ltd., have just published a booklet of Family Recipes for Wartime. All the recipes have been devised and tested in the Radiation Research Kitchen, are simple to prepare, and should become general favourites.

The names of some of the recipes in the booklet have a peculiar fascination; and those, such as "Hot Nutty Bannocks," for instance, immediately conjure up delightful fantasies. Others, however, such as "Eggless Sugarless Gingerbread, and Baking Powder Biscuits," however, good they may be, must require a somewhat vivid imagination on the part of the housewife who is to cook them!

Many other recipes suitable for wartime are included in the Radiation Cookery Book, and other booklets already issued; to avoid repetition these have not been included in the present collection, which will be a very useful and practical additional help in giving the woman who has a family to care for suggestions for varying her dishes.

"PROTECT YOUR HOMES" EXHIBITION

Good Publicity for Gas

VALUABLE publicity for gas is to be found at the "Protect Your Homes" Exhibition opened on Wednesday of last week at the Housing Centre, 13, Suffolk Street, S.W.1. It is to be open for three weeks, after which it will be on view in other parts of the country and in Scotland.

As Wing-Commander E. J. Hodsoll (Inspector General to the Ministry of Home Security) observed at the opening, it was peculiarly appropriate that the Exhibition should coincide with the launching of the first heavy air attacks on this island. The exhibits, which are mainly of a pictorial nature, show how all of us can pull our weight in an effort to minimize the effect of air attack, no matter what form it takes, and how to take reasonable precautions against becoming a casualty and consequently a liability to the country.

A remarkable series of photographs showing every device adopted by A.R.P. authorities throughout the country form the basis of the exhibition and give a complete telescopic and detailed view of this complex machine of civil defence. The Exhibition was organized by Mrs. Madge Waller (Honorary Director of Publicity at the Housing Centre) with the help of leading industrialists engaged in A.R.P. work and particularly with the help of Dr. Bernard Friedman, the Managing Director of Ascot Gas Water Heaters, Ltd. The Countess of Limerick, who is a Vice-President of the Women's Gas Council and President of the London Branch of the British Red Cross Society, presided at the opening, which was attended by representatives of A.R.P. authorities from all parts of the country. Among those present were Mr. Dean Chandler, of the South Metropolitan Gas Company, Mr. W. A. Bishop, of the Croydon Gas Company, Miss A. M. S. Wilson, B.Sc., of the W.G.C., Dr. Bernard Friedman, and Mr. Leopold Friedman.

Wing-Commander Hodsoll, in declaring the Exhibition open, spoke of the action householders could take in protecting their homes. On behalf of the Government he expressed thanks to all who had given so much of their time to A.R.P. work.. Brigadier-General Sir Wyndham Deeds, from the Ministry of Information, spoke of the infinitely important part which must be played by every member of the public in maintaining the morale on the Home Front. It was this morale of every individual in London or any other town or village in the country which might in the end prove the deciding factor in the war.

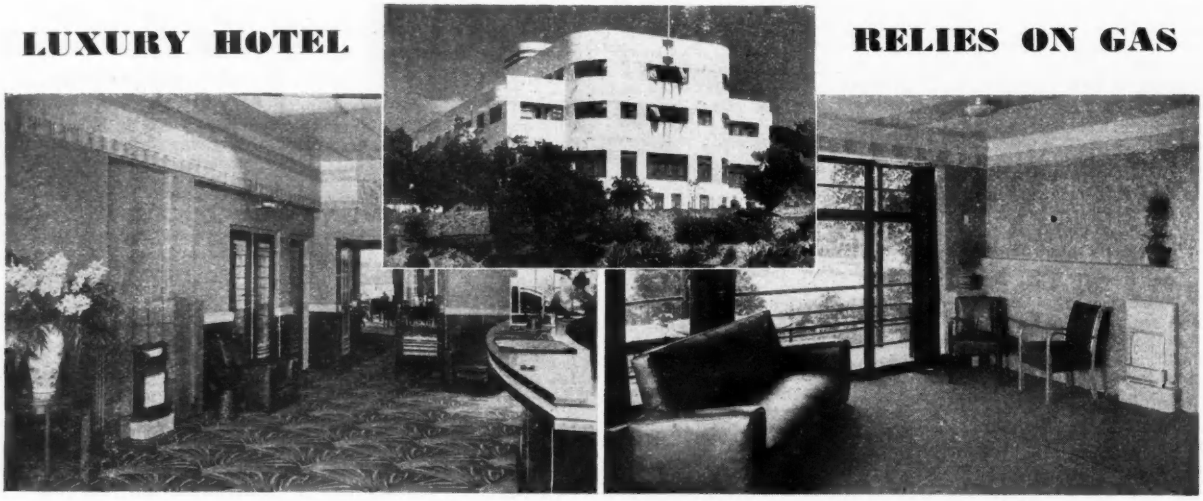
In moving a vote of thanks to the speakers, Sir Reginald Rowe paid a tribute to the generosity of a group of industrialists engaged in A.R.P. work, with special thanks to Dr. Bernard Friedman, Managing Director of Ascot Gas Water Heaters, Ltd., who stood guarantor for the cost of the Exhibition and who had rendered notable service to the science of decontamination.

To refer briefly to the part gas plays at this Exhibition, each visitor receives on entry a copy of the Ascot A.R.P. booklet to which we referred on p. 478 of our issue of June 5. In one room is the B.G.F. display based on "A.R.P.—A Job for the Gas Industry," a recent issue of "A Thousand and One Uses for Gas." (No. 308-309, Vol. XXVII.) The display was designed and constructed by the B.C.G.A. Studio and shows how gas apparatus is serving A.R.P. depots, cleansing, and decontamination depots, first aid posts, hospitals, and other centres. Copies of the issue of "A Thousand and One Uses for Gas" are available to the public. In this room also is a special display by Ascot emphasizing the importance of gas water heating for decontamination and a host of other A.R.P. purposes. Adjacent to the gas display is a fireplace containing an up-to-date Bratt Colbran gas fire. In the main room on the upper floor is a large-scale reproduction of the map from the back of the Ascot A.R.P. booklet showing places in the British Isles where thousands of Ascot appliances for National Defence purposes have been installed.

The construction and design of the exhibition screens have been the work of a young Canadian, Mr. F. H. Layfield, with the approval and support of the Ministry of Home Security and the Ministry of Information. Miss Elizabeth E. Halton, A.T.P.I., of the Executive of the Garden Cities and Town Planning Association, has been responsible for the textual side of the display. The Exhibition will continue until Saturday, July 13. Arrangements may be made with the Housing Centre for the reception of organized parties from A.R.P. depôts, A.R.P. Committees, schools, institutions, local authorities, &c.

The Scarborough Town Council has received a communication from the Scarborough Gas Company drawing attention to the fact that the Company are under an obligation to promote in the next Parliamentary sessions a Bill giving an opportunity for revising the basic price of gas. The Company stated that under the Special Enactments (Extension of Time) Act, 1940, they are at liberty to apply to the Government for an Order extending the time within which the Bill is to be promoted. The Town Council has agreed not to oppose the extension of time if this is decided upon by the Gas Company.

LUXURY HOTEL RELIES ON GAS



EVEN for so notable a city as Hobart, capital of Tasmania, a hotel that caters comfortably for 500 guests is of more than passing interest. In the suburb of Sandy Bay, fashionable seaside rendez-vous of Hobart, the "Wrest Point Riviera" Hotel occupies a position of surpassing beauty, with the additional economic advantage of being close to the city itself.

Every feature that goes to the making of a modern luxury hotel has been included in the amenities of Wrest Point. Fittings and furnishing are designed in exquisite taste, and the management sees to it that visitors, no matter how cosmopolitan, carry away with them a very respectful idea of the up-to-date standard of this remarkable hotel on the other side of the world.

Keeping in mind the ambitious nature of the project, it goes without saying that only gas could properly be responsible for the kitchen equipment, and the result has been more than satisfactory. Guests from all over Australasia, and, of course, from the Old Country, are unanimous in praising the cuisine, but best of all the feeling that the hotel is always working well within its capacity—the greatest tribute possible to any kitchen layout.

The kitchen gas equipment comprises the following: 8446 "Bordo" New World range, complete with fully solid top hot plate; "Vega" vegetable and pudding steamer; 2-pan "Causeway" fish-fryer, complete with back plate, chip box, tray, and grid; No. 27 "Savoy" "B" pattern griller; 15-gallon stock pot; and Jackson boiler. There are 16 Radiation High "Beam" gas fires installed in the hotel, two of which may be seen in the above illustrations, which, incidentally, give some idea of the taste and judgment used in the design of this ultra-modern hotel.

British readers who are lucky enough to know Tasmania's delightful climate will envy Hobart's citizens, who are able to run over to Wrest Point and enjoy its warmed swimming pool, yachting, rowing, fishing, and motor boat trips on the river Derwent. Add to this the sure attraction of a perfectly ordered and serviced dining-room, and there is little left to be desired even by the most seasoned traveller.

Gas Meter Testing in Birmingham

Inspector's Annual Report

The Annual Report of the Official Inspector of Gas Meters to the Birmingham City Justices Gas Meter Testing Committee for the year ended March 31, 1940, states that the number of meters tested totalled 76,660 against 85,414 last year—a decrease of 8,754. The fees charged amounted to £5,578—a decrease compared with 1939 of £584. The expenditure for the year amounted to £3,736, against £3,739, and shows a credit balance of £1,841, which has been passed to the General Rate Fund.

Statistical Tables are appended giving an analysis of the results of the testing. As shown in the summary of Table 1, 1,887 meters or 2.46% were rejected compared with 1,965 or 2.30% last year. Table No. 2 shows the cause of error in meters rejected. Of the 1,887 meters rejected, 385 were more than 2% fast, 389 were more than 3% slow, and 323 were rejected for unsoundness. The rejections for excessive absorption of pressure number 260. Disputed meters submitted for re-verification and certification totalled 72, of which 64, or 88.8%, were incorrect. Of the 76,660 meters tested the standard and high capacity type numbered 57,966, repaired meters 33,659, and prepayment meters 55,467. The highest monthly percentage of rejections was 3.39%, and the lowest 2.01%.

TABLE I (SUMMARY).

	Stamped.	Rejected.	Per cent. rejected.
Wet meters tested...	929	16	1.69
Dry meters tested...	73,844	1,871	2.47
TOTAL ...	74,773	1,887	2.46

During the year two Standard Test Holders, one 11 ft., and one 5½ ft. have been re-constructed, re-conditioned and re-verified, and all other Standards and Auxiliary instruments have been maintained in good working order.

TABLE No. II.—*Showing Cause of Error in Meters Rejected.*

	Leaking		More than 2% Fast.	More than 3% Slow.	Not passing gas.	Passing Gas without registering.	Excessive absorption of pressure.	Other faults.	Total.
	External.	Internal.							
Wet Meters	5	1	5	4	—	—	—	1	16
Dry Meters	142	175	380	385	19	27	260	483	1,871
	147	176	385	389	19	27	260	484	1,887

NEWCASTLE-UPON-TYNE AND GATESHEAD GAS BILL

A COMMITTEE of the House of Lords began consideration on June 18 of the Bill promoted by the Newcastle-upon-Tyne and Gateshead Gas Company. The Committee consisted of Lord Carnock (Chairman), Lord Monkswell, Lord Belstead, Lord Ellenborough, and Lord Holden. The provisions of the Bill include power to the Newcastle Company to acquire the Morpeth Gas Company's undertaking, to extend the area of supply, and to erect a new gasholder to maintain the efficiency of supply to the north of the city, where there has been considerable development in recent years.

The Bill was opposed in the House of Commons (see "JOURNAL" for April 24, 1940, p. 201), when there was opposition with regard to the proposed basic and differential prices, the proposed gasholder site and other matters. In the House of Lords, however, there were only two petitions, both objecting to the erection of the gasholder on the proposed site, on the ground that it would affect the amenities of the area adversely. The first was by the Newcastle Corporation and the Gosforth U.D.C. (represented by Mr. Craig Henderson, K.C., and Mr. Jacques Abady, K.C.), and the second by owners, lessees, and residents near the site, represented by Mr. F. N. Keen.

Mr. SYDNEY TURNER, K.C. (who appeared with Mr. Harold Willis for the Company) said the petitioners did not challenge the Company's need for the new gasholder, because of the building developments in the areas in the northern part of the city; nor was there any criticism in the petitions of the selection of the site on technical grounds. Nobody suggested that it was not the best site from the point of view of carrying on the business of the Company efficiently. The two issues raised in the petitions were that the presence of the gasholder on the site would prejudice the amenities of the surrounding properties, and that the placing of the gasholder there would conflict with certain town planning proposals.

The petitioners were making the most of local agitation which inevitably arose when the construction of a gasholder was proposed, and the position with regard to town planning was a prominent feature in the petitions. In the case of Newcastle the resolution to prepare a scheme was passed in 1935; but at the time the present Bill was before the House of Commons the draft town planning scheme had not even been approved by the appropriate Committee of the Corporation.

The CHAIRMAN pointed out that the site was practically alongside a railway line.

Mr. TURNER replied that that was a reason for his view that the proper zoning for the land was industrial and not residential.

Mr. *Edward Crowther* (Chief Engineer to the Newcastle Gas Company), in evidence, gave figures to show the increase of gas consumption in recent years, which had rendered necessary the construction of the new gasholder.

The CHAIRMAN asked whether there was a chance of agreement between the parties. It seemed to him to be futile to fight a battle in regard to a gasholder in Parliament, having regard to the expense and to the present national emergency.

Mr. CRAIG HENDERSON said that that matter had been raised already. Normally it would not be necessary to come to Parliament for the power to erect the gasholder on the site proposed, but there were other matters in the Bill, which had been dealt with in the House of Commons. In the ordinary way the powers could be sought through the Board of Trade, and it was to be part of his case to suggest that, in view of the war conditions, and inasmuch as there could be no prospect of the erection of the gasholder being permitted during the war, the proper course would be to leave the matter open until they knew what post-war conditions would be, and then the Company could apply to the Board of Trade.

Mr. TURNER said that efforts had already been made to accommodate the matter. The nature of the suggestion made was such that he was extremely surprised that the matter was not accommodated. However, the question at issue was whether or not the Company should be allowed to erect a gasholder on the proposed site, and the only scope for settlement was in some modification of the design which would make the holder less objectionable. Therefore, he made the offer publicly to build the holder further down into the ground, so that the gasholder, when extended to its full height, would be only 110 ft. above ground level, instead of 175 ft.

The CHAIRMAN asked for the views of the petitioners with regard to that offer, which he personally regarded as very generous.

Mr. CRAIG HENDERSON and Mr. KEEN were unable to give an immediate answer until they had consulted their clients.

The CHAIRMAN thereupon adjourned the proceedings until the following morning, and expressed the hope that the parties would by then have come to an agreement. He felt strongly that some agreement should be reached on such a matter at a time of terrible national crisis.

When the proceedings were resumed it was reported to the Committee that the parties had failed to agree.

Mr. CRAIG HENDERSON read a letter from the Newcastle Corporation again urging that the consideration of this matter should be postponed until after the war.

Mr. KEEN, for the owners and occupiers, supported what Mr. Craig Henderson had said.

Mr. TURNER, for the promoters, repeated the offer he had made previously. He did not propose to place any further evidence before the Committee, but would leave the opposition to go on with their case against the Bill.

The CHAIRMAN remarked that the Committee intended to intimate that it did not wish to hear any further evidence in favour of the Bill. So far as the opposition was concerned, the Committee felt that unless the evidence to be put before the Committee was very much stronger than that which was given in the other House—and in view of the offer of the promoters—the Committee would not be very much impressed. At the same time, the Committee would, of course, hear the case for the opposition, but, speaking quite frankly, he said the opponents would not have the sympathy of the Committee.

At this stage the Committee Room was cleared for the Committee to consult.

When the parties were re-admitted,

The CHAIRMAN said the Committee had been advised that they would be creating a very unusual precedent if they stopped the Bill now, and he, therefore, proposed to hear the opposition.

Mr. CRAIG HENDERSON said that the whole thing had now become so unreal that the opponents felt the only course open to them was to accept the offer made by the promoters that the holder would not have a height exceeding 110 ft. when fully extended.

INSTITUTION OF GAS ENGINEERS

We publish to-day Written Contributions to the Discussion on the June Institution Papers ("JOURNAL" of June 12). The Authors' Replies will be given in a subsequent issue.

Blackpool's New Gas-Works

By T. R. COOK

Communication No. 230

Mr. **H. Johnston** (Bradford) wrote: Some years ago I had the privilege and pleasure of serving under Mr. Cook at Blackpool, and gave a little assistance in a few of the preliminaries to the work forming the subject of this Communication and, naturally, I am pleased that the new Works is very nearly in actual being and will soon be producing. The completion of such a project almost to schedule, when burdened with all the additional duties and anxieties of the past few years, is a colossal achievement, of which Mr. Cook, his staff, and the contractors concerned may very well be proud.

In my opinion the main factors which may influence the Engineer when scheming a new Works are:

(i) Suitable and economical plant for establishing maximum service to consumers.
(ii) Layout of the necessary plant to give accessibility, economical working and efficient control.
(iii) Possible future requirements.

With regard to (1), I do not see how the conditions could be better satisfied. Carbonizing plant of latest design and of a type proved by previous experience to satisfy requirements, together with brand new gear and appurtenances of good conception and arrangement, are bound to assist good service. Boldness is evident and justifiable.

Possible future requirements and provisions for extension are largely questions of anticipation and careful estimation. The maximum weekly output at Blackpool in 1938-39 is shown to be nearly 42-mill. cu.ft. Over the last 17 years the maximum weekly output is shown to have increased consistently at the rate of 1½-mill. cu.ft. per year. The capacity of the coal gas plant is 7-mill. cu.ft., with, say, 20 per cent. carburetted water gas—8·4-mill. cu.ft. per diem. Assuming this figure provides for 7½ per cent. scurfing, and not allowing margin for spare plant, the Works maximum capacity is 58·8-mill. cu.ft. per week. In approximately 11 years then the tenth bed will, of necessity, be installed and working, and in approximately 20 to 25 years retort house extensions to accommodate additional carbonizing plant will have to be carried out. Perhaps this is a bright and cheerful estimation of Blackpool's progress, but I am wondering if sufficient allowance has been made in the facilities for expansion consistent with the remarkable progress over the last 20 years.

Mr. Cook states that the second stage of the scheme provides for a new 3-mill. gasholder. Is this new gasholder to replace existing holders on the old Works, or are the existing holders to remain in action on a portion of the old site and the new holder on the new site to be additional? In Bradford, as part of the recent reconstruction and centralization scheme, a ¼-mill. cu.ft. spirally guided relief holder in above-ground steel tank was dismantled and removed from its position at the Valley Road Works to a new site at the Birkshall Lane Works nearly three miles away and successfully re-erected, and, in truth, is a better shaped holder than originally. The saving in cost over that of a new gasholder was considerable. I do not see why larger holders, if in sound condition, should not be similarly moved.

Mr. Cook, his Committee and the Borough Council are to be congratulated on obtaining the discontinuance of contributions to the relief of rates from the profits of the Gas Department. Many towns would probably be bankrupt but for contributions from their Municipal Trading Departments. Most Municipal Gas Undertakings having contributed vast sums in the past to the relief of rates are to-day facing increasing expenditure with bare reserves. Blackpool can apparently bear this reversal of general policy, showing that it has faith in its Gas Department and is doing a great service to that Department and its customers.

I think it is good policy to lay down heavy railroad track to the Railway Company's Specification—the extra expenditure will certainly result in minimum renewals and in preservation of rolling stock. There are one or two questions I would like to ask in regard to the putting to and taking from coal stock. To-day, and possibly for some years to come, the coal position is and will remain precarious. Putting coal to stock when possible and taking from stock when necessary is an expense which many of us will have to bear, more so than in the past, and I am wondering if any mechanical handling plant has been provided for, or is contemplated, and, if so, of what type.

With regard to steaming plant, it is observed that a standby waste-heat boiler is provided. This is certainly an advantage, but since it can only act as standby to the other waste-heat boilers, would not a third hand-fired "Dry-Back" type boiler, which would act at all times as standby to any of the steaming plant, have been a more favourable scheme? We in Bradford have a "Back-Pressure" type steam engine driving a gas compressor. It exhausts at 35 lb. per sq.in. and supplies low-pressure steam to retorts and producers. This type of engine is a decided economical advantage, provided that at all times process requirements for low-pressure steam are in excess of production, the balance being made good with live steam, automatically through a reducing valve. If there is much exhaust steam at 25 lb. to waste to atmosphere because of low demand or over-production, then its economic advantages disappear.

By-Products Recovery

By D. M. HENSHAW and C. COOPER

Communication No. 231

Mr. **P. Parrish** (South Metropolitan Gas Company) wrote: Any financial statement of products recovery, in addition to what the Authors have incorporated, should include (a) sulphur as such, or as spent oxide, and (b) breeze. Under normal circumstances the financial position will not be materially changed, although under present-day conditions the recovery of sulphur as spent oxide is profitable, and breeze, although yet undefined as regards its physical and chemical characteristics, has a sensible value.

With regard to condensation and heat economy it is clear that the steaming of the incandescent coal substance in vertical retorts has not yet been established on a final basis; otherwise a known limit would be imposed on the "slip" of steam. This "slip" should be defined before an attempt is made to design a condensing system for a given unit.

If a relatively high gas velocity is to be secured, the pressure drop across the cooling system will be increased, and one must balance the extra cooling efficiency against increased power costs. Coolers arranged in banks, with gilled tubes of the type normally used for economizers, will be found to be an advantage, since maximum turbulence is thus attained, compatible with minimum resistance. The quality of the cooling water is of the highest importance. It should be free from suspended matter, and should be non-scale-forming. Where the use of scale-forming water cannot be avoided, sodium metaphosphate should be used. A proportion of as little as 2 parts per million is found to be effective in preventing the formation of scale. The treatment of river and canal water is warranted. Atmospheric water (frame) coolers can be justified in almost all cases, since the replenishing water can be reduced to about 10 per cent. of the total requirements. One must design a condensing system on the basis of the summer temperature of the cooling water (this may well be 20°C. higher than the winter temperature), in the absence of some method of attaining a uniform minimum temperature. Methods of cooling water by refrigeration, and attaining a uniform minimum temperature, may well merit a trial.

Is shock-cooling to be desired, alike from the quality of the tar and the distribution of the free ammonia? Shock-cooling would appear to involve parallel flow, whereas counter-current flow is essential to uniform cooling.

The ammonia-soda industry, particularly in connexion with its Cogswell coolers, has found cast iron to be essential, and

it has called for specially long lengths of 2-in. bore cast iron pipe, suitably prepared. Only in this way has it been possible to avoid corrosion

There is no indication in the Paper about the economics of tar extraction, particularly the removal of the last traces. Small and medium-sized Gas Works are not likely to install electrostatic precipitators, failing some clear indication of the economic advantages. Many large London Gas Works have produced spent oxide containing only traces of tar, by employing a succession of Livesey washers. These may absorb appreciable power, but they are certainly effective in the removal of traces of tarry vesicles. The tar content of spent oxide needs to be defined. After extraction of sulphur and tarry matter with CS_2 there remain other impurities, as is revealed by extraction of the residual mass with pyridine. This final extract consists of some hydrocarbons, but largely of substances—ulmates, resinous bodies, &c.—dissolved from the sawdust, or peat, or organic matter. Such extract mass is variable in composition, and calls for further investigation. If benzene is used as the medium for final extraction, one can avoid the inclusion of ulmates, resinous bodies, &c.

Whatever the Authors may affirm, it can be said that the concentration of gas liquor definitely affords a solution of the by-product ammonia problem, particularly if the vapour phase decarbonation process is adopted. Many Gas Works having vertical retorts, and which steam the incandescent coal substance, produce gas liquor of not less than 10 oz. strength in winter, and 8 oz. strength in summer. It is important to avoid the "slip" of steam, and equally to have an ordered system of ammonia recovery.

The Public Health (Drainage of Trade Premises) Act, 1937, is of real merit to those who hitherto have adopted unorthodox methods for the disposal of effluent or gas liquors. There is reason to know that effluent liquor from a concentrated gas liquor plant can be discharged to the sewers without involving an expense greater than 1s. per ton of concentrated gas liquor, 20 per cent. It is to be hoped that a more favourable figure even than this may be standardized very shortly.

It is true that ammonia and sulphur are directly related. The writer has observed*: "From the viewpoint of the Gas Industry, an ideal fertilizer would be one which necessitated the use not only of by-product ammonia, but the whole of the sulphur produced in the form of spent oxide. Such chemical fertilizers can be produced in granular form, and it is known that they possess many advantages."

In this connexion it should be noted that the Departmental Committee on Sulphuric Acid and Fertilizer Trades in 1918 remarked:

> ". . . This country possesses no natural advantages for the manufacture of superphosphates, since both pyrites and phosphate rock have to be imported as raw materials."

Is not the inference obvious? The Gas Industry should be responsible for the production of nitrogenous-phosphatic fertilizers, in which both sulphuric acid and concentrated gas liquor constitute a part. In this way indigenously-produced sulphur can play a complete rôle, and one can ensure that the full value of the sulphur unit is realized. Fluctuations of price would largely disappear, and there would be the dual advantages of stability and control. Neither of the alternative processes mentioned by the Authors would appear to be justified to-day, on economic grounds. The manufacture of the fertilizer product must be on a large scale. At such works, relatively pure ammonia can be manufactured by a process of unique economic merit, and converted to nitric acid at a price which cannot be approached by any other method. Any surplus sulphur thus arising would be used in the manufacture of the phosphatic fertilizer.

The writer urged the adoption of the static washer more than sixteen years ago, and has taken no small interest in its development. It was obvious that gas washing needed to be approached scientifically. The use of fresh water should be forbidden, and some substitute, in the form of cooled effluent liquor free from suspended matter or a condensate from the hydraulic main, divested of its free ammonia, should be employed.

Designers of coke ovens have departed from the erstwhile semi-direct recovery of ammonia, because it has been impossible to produce consistently sulphate of ammonia of satisfactory crystal size, and because there are definite advantages in the use of gas liquor as distinct from part virgin ammoniacal liquor and part ammonia in the gaseous phase. Many of the coke ovens which have installed gas washing plant are now able to produce concentrated gas liquor containing the equivalent of 20 per cent. of ammonia and 10 to 12 per cent. of H_2S. There clearly exists a method for fixing H_2S with ammonia in larger ratio than has hitherto been possible at most Gas Works. This is a method that calls for investigation, particularly at a time when this country is deprived of its usual supplies of natural purifying materials.

With regard to effluents, it is difficult to justify evaporative methods, and too much attention has been given to the quality of gas works coke to permit of its existing properties being impaired by the use of effluent liquor as a quenching medium. The rapid development of the plastic industry may yet make the elimination of phenolic bodies from gas liquor worth while either by (a) initial washing processes of the gas liquor or (b) recovery during distillation. There seems to be no limit to the uses to which modern plastic materials can be applied.

The Authors set out with commendable lucidity many aspects of the economic recovery of benzole, and the advantage of processing coals in horizontal retorts appears evident in this connexion. Any consideration of the financial aspect must recognize the concomitant benefits of (a) freedom of the gas from naphthalene, (b) reduction of the organic sulphur content, and (c) possibility of gum-forming constituents being reduced.

What is likely to affect the economics of benzole recovery to a greater extent than anything the Authors outline is the existing method of evaluating the price of benzole. The British Hydrocarbon Oils Act, 1934, is operative, and must be recognized. Any basis of settlement of price must be the c.i.f. figure, so that the benzole producers get the advantage of the increased freights. The price at which refined petrol has been bought c.i.f. port is phenomenally low.

Is not the production of a maximum yield of gaseous therms more important than a relatively small increase in the yield of benzole? Does this not account for the absence of any attempt on the part of gas engineers (a) to effect modifications in gas retort construction, or (b) to modify the processing of coal in horizontal retorts to ensure a greater yield of benzole, as this, apparently, could only be done at the expense of gaseous therms?

The adoption of back-pressure engines or pass-out turbines for the generation of power, utilizing the exhaust steam for process work, has been consistently urged by the writer for the last nine years.* Existing power plant is often fully loaded, and it is not always possible to exhaust steam at a useful pressure without serious loss of power. Moreover, the supersession of existing plant by modern equipment, although desirable from many viewpoints, cannot always be justified on economic grounds.

Many Gas Undertakings are averse to adopting automatic control, because it alters the character of the personnel, and creates unemployment amongst the type of labour for which there is least demand. On the other hand, it cannot be doubted that automatic control ensures uniformity of results which is unattainable in any other way.

With regard to organic sulphur, it cannot be doubted that the removal of organic sulphur by the benzole-washing process is desirable.

Hitherto purification by oxide of iron has represented a debit to Gas Undertakings, equivalent to about £3 8s. 6d. per ton of sulphur recovered. The position is different to-day. Dry purification should prove profitable, having regard to the higher value attached to sulphur, or to the sulphur unit of spent oxide. Purifiers should provide effective means for raising the temperature of the many tons of purifying material which they contain. What occurs now is that the gas temperature is increased, say by the use of exhaust steam, to a predetermined extent, but the mass of cold purifying material, or partially-spent material, chills the gas, and causes deposition of moisture in the final boxes. These alternate processes of wetting and drying, arising from the rotation of the boxes, do not appear to come under satisfactory control, and this may account partially for back-pressure troubles arising with certain purifying materials.

Considering that residual copperas is relatively cheap to-day, the removal of the cyanogen compounds by the Davis-Neill process would appear justified, rather than the employment of the most active ferric hydrate of the gas purifying material for the fixation of the cyanogen compounds as ferrocyanides. Gas purifying material should not be used as a filter for the elimination of tarry matter.

The Craig, Wilton and other such types of tar distilling units have reduced costs, improved results, and admitted of sharp-cut fractions being obtained. Flexibility of production of various fractions must always be a desideratum. Improved

* Trans. Inst. Gas Eng. 1935-36, *85*, 458.

*Trans. Inst. Gas Eng., 1931-32, *81*, 512.

technique is one thing, but markets for the various products for the last forty years have always been variable, and new sales problems are always arising. Adequate storage is a decided advantage, as it provides a means of security which no other factor offers. The hydrogenation of creosote at smaller factories than that at which it is at present being conducted may be one of the developments of the future.

One of the problems of the future is to modernize existing central chemical works in accordance with the advance of technique and the developments in automatic control. Larger units of plant are involved, but it is not easy to justify these when existing units are operating relatively efficiently, and when they represent an important capital sum. How to amortize the capital value of chemical plants at a more rapid rate than has hitherto been possible, and to satisfy dividend requirements, is a problem confronting many industrial organizations, and not least central chemical works treating gas works by-products on a comprehensive scale.

Gas Meters

By J. T. HAYNES

Communication No. 232

Mr. **John Terrace** (London) wrote: It is much to be regretted that, owing to existing circumstances, it was not possible for the Paper to be presented at a Meeting, as it would appear to have been written more with the intention of provoking discussion than setting forth any definite proposals of the Author. His historical sketch of the evolution of the gas meter will be convenient for future reference, and it would have been interesting to hear the views of gas engineers and the meter manufacturers on the success or otherwise of the recommendations of the Meters Committee in 1936, to adopt the I.G.E. case sizes and capacities for domestic meters as a means of reducing costs of manufacture by limiting the number of sizes required.

It will be recalled that to cause as little inconvenience as possible, the case sizes proposed covered a very large number of meters already used extensively, while a large tolerance made it possible for other sized cases to be gradually brought into line. In this way it was hoped that the beginning of economies in manufacture would have been effected.

The Council of the Institution is, I know, always desirous of being helpful in every way in any investigation which will be of advantage to the Industry, but the mere relegation of the matter to a Committee does not always have the result hoped for. The Author suggests in three different parts of his Paper that investigation should be carried out by the Meters Committee of the Institution, but as they are all concerned with construction and design, I would suggest that they should be considered first by the Meter Section of the Society of British Gas Industries, which could then refer to the Institution any testing or investigation required.

Mr. **G. E. Currier** (Bradford) wrote: Having been increasingly dissatisfied with the general meter position over a period of years, my interest was immediately stimulated by the subject chosen by Mr. Haynes, who has had considerable experience both as a user and manufacturer of gas meters. I hasten to congratulate Mr. Haynes on his important Paper, but at the same time must express disappointment at the omission of details and contentious matter. The Paper deals with several important questions relative to meters, and it is hoped that it will, when conditions are more normal, act as a spur to the Meters Committee of the Institution to become really active again and investigate the problems appertaining to design and operation of gas meters.

If one examines the amount of capital expended on meters by Gas Undertakings, it is surprising to find what little technical supervision is available, and to what a minimum statistical details are reduced, more so when it is realized that this money is expended in lightly constructed units very susceptible to abuse and neglect, scattered over wide areas, and yet in charge of the main source of revenue.

Coming to various points in the Paper, the old "lights" type and standard meters would stand a certain amount of overloading without giving any cause for concern, but the accuracy of registration of the high capacity meter under similar overloading will be seriously impaired. It should be an axiom never to work the modern high capacity meter beyond its rated capacity. A volumetric or differential governor can be used to prevent overloading, and the use of the latter would result in meters with high absorption being sent in a faulty condition.

I am pleased that Mr. Haynes has put forward the case for further standardization. In a Paper given at the British Industries Fair last year, I made a strong plea for the standardization of meters, and cited the case of the optional prepayment mechanism, the development of which must have cost the manufacturers considerable sums of money. The demand for this mechanism was large, simply because it could be obtained at no higher charge than the straight single-coin prepayment mechanism. Large numbers of optional meters have been installed throughout the country, but it is safe to say that only a very small percentage are used as such, and the great majority could have been simple repayment meters without any inconvenience to the consumers and at great saving in money to the manufacturers and to the Gas Industry. Standardization without co-ordination does not represent real progress. The development of the optional mechanism to the stage of production by a single manufacturer is a costly process, and when the development is carried out by several manufacturers, each working independently and ever watchful to avoid any infringement of patent rights, the sum total involved is correspondingly unnecessarily out of proportion.

The Author suggests that appropriate extra prices for all departures from the I.G.E. range of meters should be charged. I stated last year that additional shillings per meter should be charged to any Undertaking requiring any variation of the Institution of Gas Engineers' Specification. In making this statement, I tried to imply that I would go further than Mr. Haynes now suggests by increasing the price to the extent of deliberately discouraging such purchases. I feel that the manufacturers have this matter in their own hands, and if a bold policy is adopted, they will receive the support of the majority of Undertakings in the sure knowledge that such a policy must of necessity result in a substantial reduction in prices.

The high capacity meter is a machine working at much higher speeds, and generally measuring gas having different characteristics than obtained with the slower moving meters of the "lights" and standard types. Mr. Haynes has, I believe, for the first time plainly stated certain facts as to the need for and the effective period of meter lubrication. It is perhaps surprising that only at this present time has systematic oiling for small meters been considered, and that even now so little information is available. Examinations which I have instituted have not yet been completed, but there is a marked variation in the effective period of oiling. In certain cases faulty meters have been corrected with one oiling, and have remained in service for eighteen months without further treatment. On the other hand, a period of six weeks has been sufficient to produce valve clogging to a minor degree in another case.

It has been found that pressure oscillation usually associated with noisy working frequently occurs in modern small case meters. In one or two isolated instances conditions have become serious and investigations have so far yielded no satisfactory explanation. In some cases the complaint appears to be transient or at least variable, and although associated with valve obstruction, the actual effect of gas composition, valve metal composition and physical structure in relation to meter position and gas throughput have yet to be properly assessed.

From observations made in Bradford there is evidence that corrosion of the valve working faces may occur under certain conditions and that certain classes of valves are more prone to this trouble than others. This feature is not dependent on the position of the meter, condensation apparently not being necessary, nor on the absence of valve lubrication, as it has occurred in meters fitted in excellent positions with unlubricated valves. On the other hand, my experience does suggest that valve metal composition or physical structure may have some effect leading to accelerated attrition, and the accumulation of a quantity of soft, black, greasy particles on the valve plate. This material contains metallic particles, together with organic substances and sulphur, and the affected valves show the grain structure without any etching under the microscope. From the following details of gas composition it is clear that the gum content is negligible. Gas is manufactured in continuous vertical retorts and 10 to 15 per cent. of carburetted water gas is added. Gas is stored in water-sealed holders, and at the times of three cases (about eighteen months ago) the benzole plant was temporarily out of commission. Also the calorific value of the gas was then 500 B.Th.U. per cu.ft., but the declared value has since been reduced to 475 B.Th.U. per cu.ft. The gum content of the

coal gas, carburetted water gas and town gas was in each case five parts per million, and is so low that it is unlikely to have any effect on pressure oscillation, which had been proved to be due to meter operation by means of pressure recorders. There is little doubt that valve clogging and pressure oscillation can be remedied by periodic lubrication, with a consequent reduction in unaccounted-for gas.

A large number of tests have been made to determine the effect of lubrication on registration, and a representative sample of results is given in Table A.

Oiling with solar distillate is effected by means of oil pump and injector nipple fitted in valve box, and careful examination at each stage shows that the improvement on oiling is not due to (a) soldering and heating up when nipple is inserted, or (b) standing in test room over extended period. The examination of several hundred meters, sizes 200, 250, 400 and 450, shows registration improved in almost every case, the average increases being between 1 and 1½ per cent., and this applies to three makes of meter. Where a meter is running seriously slow, a spectacular and permanent improvement can frequently be obtained.

There is room for co-ordination among manufacturers in respect to valve lubrication, seeing that some send their meter valves out perfectly dry, while others lubricate the valves before the meters are sent out. I would also suggest research in valve metal alloys and methods of casting. It is surprising to find a wide variation in the proportion of tin and antimony in the alloys used by different makers.

Weight of valve covers has been put forward as a contributory cause of valve clogging or corrosion, and experiments were conducted by artificially loading meter valves and running these in the dry and oiled condition. The load on the meter valve was three times the weight of the cover but results to date do not show corrosion or clogging.

For the past nine months paraffin carburetting units constructed by my Meter Department have been at work and the following details may be of interest:

Carrier Gas throughput, cu.ft. per hr.	1,800
Paraffin input, gal. per hr.	1 to 1½
Paraffin condensed in first 200 yards, gal. per day ...	3
Average gas consumption on burner, cu.ft. per hr. ...	60
Outlet temperature of gas and vapour, °C.	160
Pressure difference required, in W.G.	2
Daily output from gasholder station, mill. cu.ft. ...	Approx. 1

Reports to date do not show any conclusive results, but no serious meter valve clogs have been reported since the cold spell in January, although during this period a small number of complaints of this nature were received. At the same time, I have to point out that there is no evidence of actual paraffin condensation in services and meters, and meters from positions close to the carburetter station show no signs of paraffin.

There appears to be ample scope for investigation regarding the design and the materials used in the construction of meters. Valve clogs, which in a "lights" type meter would be of little or no importance, become much more serious in the high-capacity type of meter, where the size of valve and area of rubbing surfaces are increased and the diaphragm size is reduced, and I note that Mr. Haynes pays particular attention to the dimensions of the diaphragm which provides the motive power. At the same time it should be pointed out that the gas generally manufactured throughout the country conforms to more constant composition and to a higher degree of purity than ever before. The wide variety of materials (synthetic and others) available in normal times should make it possible to reduce meter manufacture to a series of mouldings and pressings plus assembly, all with a view to reducing the initial cost and the cost of repairs and maintenance.

Reactive Gas Coke by Alkali Activation

By H. H. THOMAS and P. J. ASKEY

Communication No. 233

Mr. **A. Allen** (Manchester) wrote: I wish to compliment the Authors of this Paper on the very able way in which they have carried out the experiments. The Paper should be welcomed by the Gas Industry.

After carefully reading the Paper, and also because of my own experience, I am of the opinion that the method of adding alkali to coal before carbonization is not likely to receive the favourable consideration of gas engineers generally. To produce a satisfactory coke, and to ensure that damage to retorts is not excessive, far too many factors have to be taken into consideration. Furthermore, the cost of gas production under alkali activated conditions of carbonization, as given in Section VIII, cannot be taken as a guide for anything but the experiment at Liverpool. It would be quite a simple matter to show that it would not be to the advantage of all Gas Undertakings to carbonize coal primarily for the production of coke.

The Authors have been very bold in stating that if, in the future, the burning of raw coal is to be greatly reduced, coal will have to be carbonized primarily for the production of coke, and that the excess gas should be used for the heating of retorts. It would be extremely interesting to see the result if the Liverpool Gas Company were to reduce gas production costs by adding alkali to all the coal carbonized, and carbonizing as suggested by the Authors.

In considering a new process, gas engineers have to bear in mind the whole process of gas manufacture. While the Authors have paid admirable attention to the factors governing the production of suitable coke, they have, I think, left themselves open to some little criticism in that they have not given information regarding the use of alkali activated coke for heating retorts. I have had some experience of using this coke in step-grate producers, and I must state that it was far from being a pleasant experience. I should like to ask the Authors whether alkali activated coke was used for the total heating of the four retorts used for the experiment; if not, can they give any other information about this matter?

It may be said that alkali activated coke or breeze should not be used for heating retorts, but if this is so it is a most damaging admission.

I notice that the Authors mentioned that there is a slight loss of alkali somewhere. I suggest it is possible for a small portion of the alkali to be carried forward with the gas from the retorts. I am not sure, but I have a strong suspicion that

TABLE A—EFFECT OF OILING HIGH CAPACITY METERS WITHDRAWN FROM DISTRICT FOR EXAMINATION.
(Consecutive Number as taken from batch of Meters.)

Batch No.	Size.	Date.	Gas Throughput. cu. ft.	Test Rate per hr.	Before Oiling.		After Oiling.		Effect.
					Absorption Tenths inch W.G.	Error per cent.	Absorption Tenths inch W.G.	Error per cent.	
1	2	3	4	5	6	7	8	9	10
1	200	1938	346,000	200	3—4	Correct	3	2.0	+2.0
2	200	1938	209,000	200	4—6	—1.0	3—5	Correct	+1.0
3	200	1936	030,300	200	3	—3.0	3	—1.0	+2.0
4	200	1937	321,300	200	3	—1.8	3	—0.6	+1.2
1	250	1936	090,900	250	3	—4.0	3	—2.6	+1.4
2	250	1936	040,400	250	3	+0.4	3	+0.7	+0.3
3	250	1936	778,900	250	3	—3.3	3	—2.5	+1.8
4	250	1939	024,500	250	3—5	+1.0	3—4	+1.0	—
1	400	1938	281,000	400	4—5	—2.6	4—5	—0.2	+2.4
2	400	1937	520,200	400	4—5	—3.2	4—5	+0.6	+4.8
3	400	1937	254,700	400	4—5	+0.2	4—5	+0.7	+0.5
4	400	1938	249,500	400	4—5	—2.3	4—5	—1.8	+0.5
1	450	1938	201,700	450	4—6	+2.0	4	+1.9	—0.1
2	450	1935	980,100	450	4—6	+3.0	4—5	+5.2	+2.2
3	450	1938	200,400	450	3—4	+2.5	3	+3.5	+0.9
4	450	1937	714,100	450	3—5	+1.9	3—4	+2.0	+0.1

the method of adding alkali to coal before carbonization results in tar with a high water content, unless special precautions are taken. It is well known that minute particles of solid matter tend to prevent the separation of tar and liquor; I need only mention the passing of water gas tar, with a high water content, through a filter press to illustrate the effect of removing solid particles—the separation is practically complete and immediate. Can it be that small particles of $CaCO_3$ or CaO give rise to tar with a higher water content than normal? I should like to know if the Authors have considered the possibility of alkali loss in the way I have described.

It is interesting to read that the activation of coke by alkali after carbonization is receiving attention. From many points of view this method would be a distinct advance on the one more fully described in the Paper. It would, I think, be more acceptable to the Gas Industry, and I hope the experiments now being carried out by the Authors will lead to a successful solution of the problem.

Mr. **G. E. Currier** (Bradford) wrote: The economic success of the scheme described in the Paper is entirely dependent upon the developments and retention of a domestic market at an enhanced price to an extent sufficient to justify the expense involved in plant and additional material, bearing in mind that existing markets may be adversely affected by the increased ash content of the coke, which must necessarily occur in all grades. Further, breeze production appears to be doubled, which will increase the difficulties experienced in its disposal by some Undertakings. These factors, along with the deterioration of refractory materials in the steaming zone, must be set against the problematical increased revenue resulting from the sale of treated coke, although the adoption of two-stage heating may result in no undue deterioration of brickwork.

A likelihood of further breeze production resulting from storage, even in bunkers, will probably necessitate the use of de-breezing plant in all cases.

Further investigation would be useful regarding the following:

(a) Production of breeze in stocking.

(b) Effect of stocking and weathering upon the activated coke.

(c) Effect of the increased ash content of the coke upon producer and retort materials.

Most of the apparent disadvantages of the process appear to be due to the admixture of the activating material with the coal prior to carbonization, with which the main part of the Paper is concerned. Further experimental work on the activation of the carbonized fuel should, if successful, overcome many of the apparent difficulties of the present method of pre-treatment of the coal itself.

Figure 5 serves to emphasize the importance of coke as a source of revenue, and the effect of its price on gas production cost. The absence of coke revenue may be a stiff hurdle for a total gasification process to surmount when applied commercially.

I was particularly interested in Section XI, dealing with the preparation of reactive coke for producer gas traction, seeing that at Bradford we are experimenting with the production of a suitable fuel for this purpose from a Yorkshire Coal, carbonized in a continuous vertical retort. So far the indications are that the fuel will be quite suitable, but the reduction in yield of gaseous therms appears to be approximately 10 per cent.

The closing of export markets has made the creation of additional demand for domestic purposes of greater importance than ever before. The Liverpool Gas Company has carried out a large amount of pioneer work in the preparation of a coke specially suitable for domestic purposes, and the latest work, as described in this Paper, will be of great use to the Industry.

GAS LIQUOR DISTILLATION*

By F. H. PEAKIN

Reprinted from the Journal of the Society of Chemical Industry. We are indebted to the Editor of the Transactions for the loan of the blocks used for illustrating the Paper

(*Continued from page* 630)

Experimental

The technique is extremely simple, and is that used by Piron, and in a slightly more refined form for the precision results of Calingaert and Huggins. The apparatus consists of a two-litre flask connected via a splash trap to a Liebig condenser, using rubber stoppers throughout. A few beads promote regular boiling, while the head is lagged to minimize reflux. The receivers consist of a score of weighed flasks with rubber stoppers (Piron worked by volume). A litre of ammonia solution is put into the flask and is then distilled at a regular rate. The receivers are changed when they have collected approximately equal increments, reweighed, and the ammonia is determined volumetrically. Table II shows the method of calculation. The determinations have been made over a low concentration range because interest is chiefly centred in the final stage of ammonia stripping.

The first members of the series are very erratic, because until the still head is hot, reflux occurs with consequent enrichment of ammonia in the vapour phase. The subsequent values are fairly constant, and are characteristic for the p_H of the solution, as will be shown subsequently.

These determinations of K were now carried out at different p_H values. Instead of a pure aqueous solution of ammonia being submitted to distillation, it was made up in a buffer consisting of suitable proportions of sodium dihydrogen phosphate and disodium hydrogen phosphate. This buffer was chosen because any specific salting-out action of the phosphate would then be constant throughout; also these buffers have a low temperature coefficient. The p_H was measured at room temperature before and after distillation, sufficient buffer being used to prevent much alteration taking place, and the mean p_H value was then associated with the value of K.

Fig. 7 shows how this distillation constant varies with the p_H of the solution. There seems to be a fairly clear-cut effect; thus at p_H 7 the vapour phase will be three times as rich in ammonia as the liquid phase, while at p_H 10 it will be thirteen times as rich. The concept of free and fixed ammonia is well brought out, for near the neutral point the vapour pressure rapidly disappears. The precise shape of the curve in this region is uncertain, because the p_H at the boiling point is not known accurately, and a slight change of p_H is critical. However, the curve is probably asymptotic to this axis, for pure neutral ammonium sulphate or chloride will evolve ammonia on boiling its aqueous solution. It must be concluded, too, that free and fixed ammonia are relative terms, and the conditions must be specified for them to have any definite meaning.

How can these results, obtained in solutions of known composition, be applied to the partly stripped and complex effluent from an ammonia still? For instance, calcium chloride is present as a product of the reaction of lime with the ammonium chloride of the gas liquor, and calcium chloride forms well-defined com-

* Read before the Birmingham and Midland Section of the Society of Chemical Industry.

TABLE II.

DISTILLATION OF PURE AMMONIA SOLUTION.

Solution distilled. Ammonia.			Distillate.					
Quantity, grams.	Grams, total.	%NH_3	Average %NH_3 = C_2	Quantity, grams.	Ammonia. Grams, total.	%NH_3 = C_1	$K = \frac{C_1}{C_2}$	p_H of solution distilled.
1000	0·6670	0·0667						
			0·0643	2·600	0·0504	1·94	30·2	10·75
997	0·6616	0·0619						
			0·0596	4·319	0·0475	1·10	18·4	
993	0·5691	0·0573						
			0·0553	4.422	402	0·912	16·5	10·70
989	0·5289	0·0534						
			0·0517	4·345	373	0·859	16·6	
984	0·4916	0·0500						
			0·0482	4·322	358	0·830	17·2	10·65
980	0·4558	0·0465						
			0·0449	4·533	325	0·719	16·0	
975	0·4233	0·0434						
			0·0419	4·995	309	0·619	14·8	10·60
970	0·3924	0·0404						
			0·0391	4·565	261	0·573	14·7	
966	0·3663	0·0379						
			0·0369	3·685	199	0·540	14·6	10·55
962	0·3464	0·0360						
			0·0351	4·045	199	0·493	14·0	
958	0·3265	0·0342						
			0·0332	4·151	199	0·480	14·4	
954	0·3066	0·0322						
			0·0312	4·156	184	0·442	14·2	10·50
950	0·2882	0·0303						
			0·0293	4·890	204	0·418	14·3	
945	0·2678	0·0283						
			0·0274	5·127	186	0·363	13·3	
940	0·2492	0·0265						
			0·0256	5·170	187	0·361	14·1	10·45
935	0·2305	0·0247						
			0·0240	4·426	148	0·335	13·9	
930	0·2157	0·0233						
			0·0225	4·698	145	0·309	13·7	
926	0·2012	0·0217						
			0·0210	5·066	146	0·288	13·7	10·40
920	0·1816	0·0203						
			0·0190	9·816	252	0·257	13·5	
911	0·1616	0·0178						

pounds with ammonia; will its presence, therefore, result in the ammonia being held more tenaciously in solution? The answer is given by a determination of the distillation constant in 0.2N-calcium chloride solution, when the value 16 was obtained. This is actually higher than the figure of 14.7 for pure aqueous solution—evidence that compound formation does not occur or has no effect, and in fact that calcium chloride helps to salt out the ammonia. It is not surprising, therefore, that many determinations of K on industrial samples have all given results lying close to the K-p_H curve shown. Nevertheless, the conclusions must be applied with some caution, for the results given were obtained at atmospheric pressure, whatever that was, and until the work is extended to the 1½-2 atmospheres usual in industrial practice, it

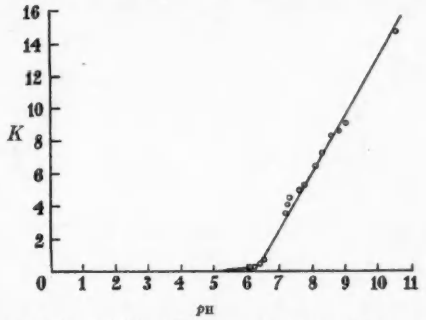


Fig. 7—Values of K for ammonia solutions at different p_H

can only be assumed that the arguments will apply to those conditions too. What is clear, however, is the important connexion between p_H and the distillation constant or, what amounts to the same thing, between p_H and the steam required to strip the ammonia from solution.

Steam Requirements for Ammonia Stripping

Reading off from the curve, the ammonia in gas liquor has a distillation constant of about 10. Although there are several interfering factors, such as reflux, dilution of the liquor by steam condensation, non-attainment of equilibrium at each tray, presence of carbon dioxide, &c., this figure governs the approximate enrichment ratio when gas liquor is distilled to concentrated gas liquor—*e.g.*, a gas liquor containing 2% of ammonia will yield a concentrated liquor with approximately 20% of ammonia.

The most important application of the theory is to the calculation of the steam required to strip the still effluent to the best economic level of ammonia. Obviously, from general considerations alone, there must be some limit below which the removal of the last traces of ammonia would require excessive amounts of steam.

Function of Steam in the Still

Steam in the distillation of gas liquor serves two purposes:

(1) It is the source of heat for heating and maintaining the liquor at 100° or higher, the most favourable temperature for ammonia disengagement; it must also supply a considerable amount of heat absorbed by the dissociation of ammonium carbonate, evolution of carbon dioxide and ammonia, and so on.

(2) It is the atmosphere of inert gas which makes up the total gas pressure over the liquid. For this purpose, air, nitrogen, or any inert gas would serve equally well, but steam, of course, is most suitable.

It is possible from thermochemical data to obtain a very good estimate of the heat absorption under heading (1), but for the present purpose this is unnecessary. It is only necessary to bear in mind that a considerable amount of heat must be supplied to the liquor to make up for heat absorbed and heat dissipated. Whether the ammonia is being distilled to concentrated gas liquor or for sulphate manufacture (and particularly the latter), much of this heat is recovered from the hot gases leaving the still.

The steam will be considered first in its stripping function only. With a perfect column, the steam required would be governed quite simply by the distillation constant K. If this is 10, then the weight of steam required would be the weight of liquor/K or 1.0 lb. per gallon, and it is independent of the strength of the liquor distilled. The richness of the ammonia-steam mixture would, of course, vary directly with that of the liquor; a 2% liquor would give 20% ammonia in steam, and 1½% liquor 15%, and so on. It may be emphasized again that, for the moment, thermal considerations are being ignored. This it is permissible to do at the tail of the still, where only small amounts of ammonia are involved and no appreciable heat absorption occurs.

The amount of steam required to strip the last traces of ammonia would appear, by a simple calculation, to be enormous. Thus Parrish[9] has constructed the curve in Fig. 8 from the data of Piron. The curve is of the logarithmic type and becomes steeper and steeper for small decreases in the strength of the liquor. Parrish says rightly that "the graph is of importance as indicating the economic limit which should be looked for as representing the point at which further distillation is unprofitable. It also furnishes some idea as to the relative value of gas liquor at different concentrations from the point of view of the distiller."

However, Piron's data apply only to discontinuous or batch distillation, and although of great importance, cannot be applied as they stand to continuous counter-current distillation. These results have now been re-calculated on the basis of pounds of

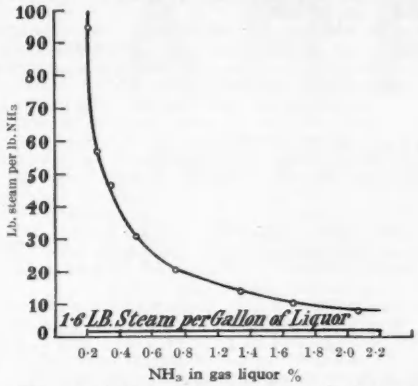


Fig. 8—Theoretical steam consumption per lb. of ammonia with varying strength of gas liquor (Parrish)

steam per gallon of ammonia liquor, and the figure obtained, as might be expected, is practically constant. In other words, although the steam strips only a little ammonia at the bottom, the same steam will continue to do work all the way up the column—which, of course, is the great advantage of the countercurrent method.

There are two directions in which these principles can be applied so as to obtain the best economic operation of the ammonia still.

(1) *Conservation of heat.*—This, of course, has been well understood by the designers of plant. Not only can steam be saved, but ammonia too, for heat loss means steam condensation, increase in volume of effluent, and hence inefficient working, although the degree of stripping may be good.

(2) *Control of the p_H of the effluent.*—For the best results this should be kept as steady as possible. The steam required to strip the last traces of ammonia is about three times as much as p_H 7 as at p_H 9. The steam and lime consumptions are thus dependent on each other. It is a matter for each individual works to balance up, from the cost of steam, the cost of lime, and the value of the ammonia produced, what level of p_H gives the best economic working. If steam is very cheap, a lower p_H can be used. If lime is cheap or steam is dear, then it will pay that plant to work at higher p_H.

It will probably be found that if good heat recovery is practised, steam can be cut down step by step with a gradual increase in the ammonia content of the effluent. At a certain point, however, there will be a break, and further reduction of steam will cause a sharp rise in the ammonia content, accompanied by a fall in the temperature of the pre-heated liquor. This is an indication that enough heat is no longer being supplied to the system, and illustrates the differentiation between the heating and the stripping functions of the steam.

It may be of interest to mention that a large gas liquor still, using as much recovered heat as possible from the conversion of its ammonia into sulphate, can be worked at a steam consumption

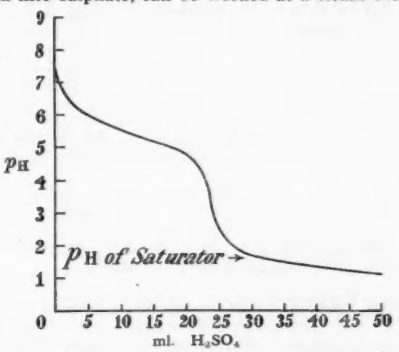


Fig. 9—Titration of a molal solution of pyridine with N-sulphuric acid solution

of 1.4 lb. of steam per gallon of 2% liquor, a third or more of the ammonia being fixed, and limed so that the effluent is at p_H 8.

A corollary of this condition for p_H and steam control is that means should be provided for obtaining a constant feed of liquor, and for metering the steam.

Behaviour of Pyridine in Gas Liquor

The behaviour of an impurity which accompanies ammonia in gas liquor, namely, pyridine, will now be considered. Pyridine is usually present in quite small proportions, but it may have an important influence when the gas liquor is being distilled for

ammonium sulphate manufacture. The pyridine in gas liquor has a distillation constant of about 15, so that it is removed at least as efficiently by steam-distillation as the ammonia it accompanies. For this reason only minute amounts of pyridine are usually found in the effluent from the still.

A glance at the electrometric titration curve of pyridine (Fig. 9) shows that it should be absorbed with fair completeness in sulphuric acid solutions. This is found to be the case when the crude ammonia from the gas liquor still is absorbed in a saturator, and only a small proportion passes over with the waste gases to appear in the devil liquor. The p_H of a saturator is commonly of the order of 2.

It has been shown recently[10] that although pyridine neutralizes one equivalent of sulphuric acid in solution, the only solid sulphate formed under ordinary conditions is the acid salt $C_5H_5N.H_2SO_4$, and that this acid salt is extremely soluble in water. Pyridine will therefore tend to accumulate in the bath until its rate of input is balanced by the rate at which it is taken out. This latter rate is determined by the proportion of mother-liquor extracted with the ammonium sulphate.

Thus, a works making 50 tons of ammonium sulphate per day, with a gas liquor content of only 100 p.p.m. pyridine, is actually producing about 13 gallons of pyridine a day, and it is easy to show that if the moisture content of the extracted salt is 5% the pyridine content of the mother-liquor may exceed 1%.

It is the practice at some works[11] to remove periodically a portion of the mother-liquor and neutralize it with ammonia. The object is to remove the iron which has built up in the liquor in just the same way as pyridine and other impurities do. This treatment liberates the pyridine and provides a possible way of recovering pyridine if a greater demand should develop. To apply it, it becomes necessary to know the solubility of pyridine in solutions of ammonium sulphate. The Author has recently carried out this work, and the results are summarized in Fig. 10, which shows that pyridine is very strongly salted out by ammonium sulphate. Although pyridine is miscible in all proportions with water at 25°, its solubility in saturated ammonium sulphate solution is only 0·37%. The addition of ammonia then will liberate pyridine, which will separate out almost entirely, as an upper layer containing about 75% of pyridine, together with other impurities which separate as a scum.

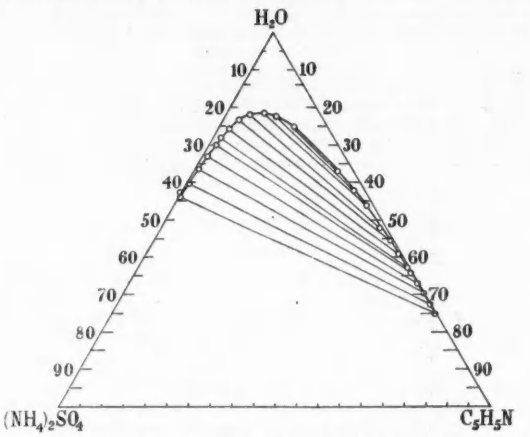


Fig. 10—The system $(NH_4)_2SO_4$–C_5H_5N–H_2O at 25°

In conclusion, the Author wishes to record his thanks to the chairman of Messrs. Brotherton & Co. for permission to publish this work.

[9] Parrish, " Design and Working of Ammonia Stills," p. 69. Ernest Benn, 1924.
[10] Peakin, J.S.C.I., 1940, **59**, 56.
[11] T. B. Smith, Coke Oven Managers' Year Book, 1939, p. 463.

(A Report of the Discussion on the Paper will be published in a subsequent issue of the "Journal.")

Trade News

A.R.P. Flooring Mix

To protect exposed timber inside roof spaces from the fire effects of incendiary bombs, Imperial Chemical Industries, Ltd., recently introduced a mineral plastic generally suitable for such purposes, and available at a low price, called " Pioneer " Fire-Resistant Finish—A.R.P. Grade. This is essentially a brush or spray finish, however, and has been developed in order to provide protection against the fire effects of light incendiary bombs, at the lowest possible cost.

For a balanced protective system, the horizontal layer or floor on which the bomb would come to rest should always be given greater protection than the upper timbers, and, although it might be possible to obtain this by building up " Pioneer " Fire-Resistant Finish—A.R.P. Grade to the required thickness, it is obvious that this can be done with much greater ease and much more satisfactorily by using a material that can be trowelled. For this reason Imperial Chemical Industries, Ltd., have introduced " Pioneer " A.R.P. Flooring Mix. This is composed of an aggregate and binder based on the same material as the fire-resistant finish, and embodying the same protective qualities. Another practical advantage of using the flooring mix is that floors thus protected can still be used for light duty provided they are not subject to constant wetting.

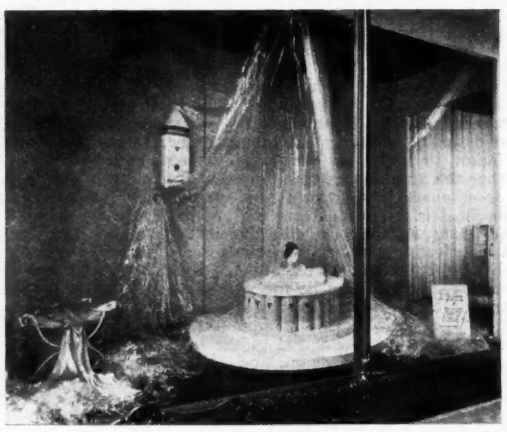
Tests have shown that a ¾ in. screed of the flooring mix on the base, with fire-resistant finish on the upper timbers, gives complete retardation and prevents a burn-out against the kilo incendiary bombs. The flooring mix can, moreover, be built up even to twice that thickness (1½ in.) or more, if necessary.

Expediting Delivery

Walworth, Ltd., ask us to call attention to the fact that owing to the tightening up of control on all production and supplies, buyers should in their own interests specify Government Department symbols and contract numbers on all orders entitled to such marks of priority. This will expedite delivery of all orders placed for work of national importance.

Rawlplug A.R.P. Requisites

In addition to their better known products, the Rawlplug Co., Ltd., of Cromwell Road, S.W.7, market a number of A.R.P. requisites which are in considerable demand at the present time. While supplies last, the Company can give immediate delivery of these materials from stock. Among them may be mentioned a cheaply priced fire extinguisher for home, office, workshop, or factory; self adhesive tape for protecting windows against splintering, for fixing the new " Contex " containers to respirators, and for many other domestic, electrical, and general purposes; anti-dim solution for respirator eyepieces, spectacle lenses, car windscreens, binoculars, &c.; and a special lacquer which, when applied to glass, is stated to render it splinterproof. It is a liquid, white in colour when applied, but which dries transparent in approximately two hours. It can easily be removed when desired, and one gallon will effectively cover an area of approximately 40 sq.yds. The Rawlplug Co. also supply fuse wire, of which they recommend all users to obtain a small reserve for emergency purposes, as manufacturing difficulties are likely to restrict supplies.



This striking display, featuring an " Ascot " multi-point gas water heater in what might be described as an ultra-modern setting, was shown for a period of twelve days in one of Harrods' windows recently. Such a display as this has to be seen to be truly appreciated, but it may be remarked that the exclusiveness and forcefulness of presentation which always characterize the displays of this famous store provided in this case a tribute to the modernity of gas service. Indeed, the treatment might well be described as unique

Gas Products Prices

The London Market

June 24.

Prices of tar products in the London market remain steady at the following levels: Pitch, about 50s. per ton f.o.b.; creosote, about 4¾d. to 5d. per gallon; refined tar, 3¾d. to 4d. per gallon; the price of pure toluole under the Ministry of Supply Order is just under 2s. 5d. per gallon; pure benzole, 1s. 10d.; 95/160 solvent naphtha, 1s. 11d. to 2s.; and 90/160 pyridine, about 18s. 6d., all per gallon naked; refined naphthalene crystals, £23 per ton in bags, all *ex* makers' works.

The Provinces

June 24.

Crude Gas-Works tar, 27s. 3d. to 32s. 3d.

To avoid misunderstanding, it is necessary to state that the above price is not claimed to represent a market value. It is a price worked out from week to week upon a system which has been used for many years as a basis for the fixing of certain contracts for crude tar of varying qualities in different areas.

The average prices of gas-works products during the week were: Pitch—East Coast, 47s. 6d. to 52s. 6d. f.o.b. West Coast—Manchester, Liverpool, Clyde, 47s. 6d. to 52s. 6d.* Toluole, naked, North, 1s. 9½d. (Controlled by the Ministry of Supply Order No. 1, which fixes the maximum price at which this material may be sold). Coal tar, crude naphtha, in bulk, North, 9d. to 9½d. Solvent naphtha, naked, North, 1s. 8d. to 1s. 9d. Heavy naphtha, North, 1s. 4¼d. to 1s. 5¼d. Creosote, *ex* works, in bulk, North, liquid and salty, 4¼d. to 4¾d.; Scotland, 4¼d. to 4¾d.; low gravity, 4¼d. to 4¾d. Fuel Grade, 4d. to 4¼d. Carbolic acid, 60's. 3s. 6d. to 3s. 7½d. Naphthalene, £15 to £20. Salts, 75s. to 85s., bags included. Anthracene, "A" quality, 4¼d. to 4¾d. per minimum 40% purely nominal. Heavy oil: Unfiltered anthracene oil, (min. gr. 1,080), 5¼d. to 5½d.; filtered heavy oil (min. gr. 1,080), 5¾d. to 6d.; heavy anthracene oil gr. less than 1,080, 6d. to 6¼d.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls, whatever they may be.

Scotland

GLASGOW, June 22.

There is no change of any consequence to report in market conditions throughout the week. Prices remain steady to firm.

Crude gas-works tar.—The actual value is about 42s. 6d. to 45s. per ton *ex* works in bulk.

Pitch of vertical quality is valued at 40s. per ton f.o.b. for export and 37s. 6d. per ton *ex* works in bulk for home trade.

Refined tar.—For home delivery supplies are available at 4¼d. to 4½d. per gallon, while for export value is maintained at 3½d. per gallon, both f.o.r. naked.

Creosote oil.—A moderate volume of business is being concluded at the following prices: Specification oil, 5½d. to 5¾d. per gallon; low gravity, 6¼d. to 7d. per gallon; neutral oil, 6d. to 6½d. per gallon; all *ex* works in bulk.

Cresylic acid.—Very little new business is being concluded and prices are easy as under: Pale, 97/99%, 2s. 1d. to 2s. 2d. per gallon; dark, 97/99%, 1s. 10d. to 1s. 11d. per gallon; pale, 99/100%, 2s. 6d. to 2s. 8d. per gallon; all *ex* works in buyers' packages.

Crude naphtha is valued at 6½d. to 7½d. per gallon *ex* works in bulk, according to quality.

Solvent naphtha.—90/160 grade is 1s. 8¼d. to 1s. 9¼d. per gallon and 90/190 heavy naphtha is 1s. 4¼d. to 1s. 5¼d. per gallon.

Motor benzole is 1s. 8d. to 1s. 8½d. per gallon.

Pyridine.—Values are called 18s. to 19s. per gallon for 90/160 grade and 20s. to 21s. per gallon for 90/140 grade.

Trading Results

John Brown and Co.

The report of John Brown & Co. shows that the trading results of Thos. Firth and John Brown were satisfactory and that their establishments were working at full capacity. A larger output was obtained from the Company's collieries and coke ovens and from Dalton Main Collieries. The reasons for the decline in profits by £139,000 to £411,337 for the year ended March 31, which occasioned the reduction by 2½% in the dividend to 15s.%, tax free, are not specifically mentioned. The balance sheet shows that sundry creditors more than doubled at £1,662,131, against £705,334, and sundry debtors stood at £387,262, compared with £184,476. Cash amounted to £1,862,930, against £832,279.

Whessoe Foundry.—Profit £69,630 (£84,035), after £65,000 (£50,389) for taxation, but nil for A.R.P. expenditure (£10,000) and for investment reserve (£5,000); 40% (same); general reserve, nil (£25,000); forward, subject to Directors' commission, £34,052 (£14,422 after commission and after additional taxation for 1938-39, £5,490).

Gas Undertakings Results

Bideford

In their report for the year ended March 31 the Directors of the Bideford Gas and Coke Company, Ltd., state that the business of the Company continues to show satisfactory progress. The quantity of gas sold during the twelve months was 713,574 therms, which compares with a total of 690,725 therms for the preceding twelve months. The amount consumed in public lamps on the present occasion figures at 7,567 therms, as against 30,862 therms a year ago. The balance of revenue carried to Profit and Loss Account is £6,037—practically the same as last year. For the first half of the year dividends were at the rates of 7½% on the original shares and 6% on the additional shares; for the final six months they are at the maximum rates permitted under the sliding-scale with the current price of gas—namely, 6¾% on the original shares and 5¼% on the additional shares. This will leave a balance of £1,844 to be carried forward.

South African

The Directors of the South African Lighting Association, Ltd., reporting upon the results of the working during the year 1939, state that the sales of gas in Port Elizabeth show a decrease of 4.68%, while those at Grahamstown have increased by 7.32%. The results at Port Elizabeth have been adversely affected by the decreased demand for industrial purposes. A contribution to retort renewals has been charged to manufacturing expenses, based upon the quantity of coal carbonized. A dividend for the year at the rate of 2½% will leave (including the sum of £7,004 brought forward from 1938) an amount to carry forward to the year 1940 of £7,601. A year ago the dividend was at the rate of 4%.

A.R.P.

PROTECTION OF SANDBAGS.

METRO CREOSOTE EMULSION

METRO COPPER CREOSOTE EMULSION

Both Emulsions conform to the Specification of the Ministry of Home Security Memorandum A.R.P. 279/1939 — 20/10/39, and are available in GREEN at slight additional cost.

SOUTH METROPOLITAN GAS CO.

REGIS HOUSE,
KING WILLIAM STREET,
E.C.4.

Telephone: AVENUE 2755.

For every size of works and every class of coal...

WEST'S

CARBONIZING PLANTS

GLOVER-WEST VERTICALS

WESTVERTICAL CHAMBERS

440 carbonizing plants have been built or are under construction by West's in 24 countries. Working results from a wide variety of gas coals have established the high efficiency and adaptability of the West systems.

WEST'S

GAS IMPROVEMENT CO · LTD ·

MILES PLATTING MANCHESTER 10

TELEPHONE—COLLYHURST 2961-2-3-4-5 · TELEGRAMS—STOKER, MANCHESTER

LONDON OFFICE TEMPORARY ADDRESS—BATH ROAD · HARMONDSWORTH · WEST DRAYTON · MIDDLESEX TEL.—WEST DRAYTON 2288-9

GAS STOCKS AND SHARES

There were severe reactions in all sections of the Stock Exchange last week after the disastrous collapse of France. Even Government stocks were reduced to their minima although these were almost the only securities to show any subsequent recovery, and by the end of the week quotations were merely fractionally lower than a week ago—2½% Consols closing at 71½ against 72 the previous Friday. Despite the many good reports from commercial undertakings, prices in the industrial market also reacted sharply and there appears little likelihood of much improvement in the near future. Similar conditions also prevailed among oil, rubber and mining shares.

The Gas Market fared no better than the rest and a large number of issues reacted in value. Many of the reductions, however, occurred among stocks which had not been affected seriously during the past few weeks and also among the number appear several ex div. markings. South Metropolitan ordinary has depreciated heavily during this period, and at 50, the price at which it is on offer at the time of writing, a yield of 9% is obtainable on last year's distribution of 4½%. This is the highest yield on the ordinary stock of any gas undertaking operating in this Country. It should be remembered, however, that a number of stocks are standing at fictitiously high prices by reason of the absence of any business. Gas Light units were only slightly lower at 12s., and apart from those previously mentioned and the falls in Croydon sliding scale and Imperial Continental 2½ points each, and Malta and Mediterranean and Southampton 4 points each, the bulk of the reductions were confined to fixed-interest stocks.

On the Provincial Exchanges, Bristol and Liverpool ordinary stocks each fell 6 points, Weston-Super-Mare 4, and Bath 3½ points.

Apart from the usual ex div. reductions there were no changes in the Supplementary List.

Official Quotations on the London Stock Exchange

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations June 21.	Rise or Fall on Week.
1,767,439	Mch. 11	8	7	Alliance & Dublin Ord. ...	110—115	...
374,000	Dec. 27	4	4	Do. 4 p.c. Deb. ...	80—90	...
957,608	May 13	5	5	Ascd. Gas & Water U'd'ts Ord.	14/—16/-	...
500,000	"	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	15/6—17/6	...
535,545	"	4	4	Do. 4 p.c. Red. Cum. Pref.	14/6—16/6	...
336,646	"	4	4	Do. 4 p.c. Irred. Cum. Pref.	13/—15/-	...
750,000	Mch. 18	3½	3½	Do. 3½ p.c. Red. Deb. ...	82—87	...
560,070	Feb. 19	7	7	Barnet Ord. 7 p.c.	122—127	...
300,000	Apl. 8	1/4½	1/9⅜	Bombay, Ltd.	19/6—21/6	...
181,915	Feb. 26	9½	9½	Bournemouth Sliding Scale ...	145—150	...
690,526	"	7	7	Do. 7 p.c. max. ...	118—123	...
493,960	"	6	6	Do. 6 p.c. Pref. ...	116—121	...
50,000	June 17	3	3	Do. 3 p.c. Deb. ...	68—73*	−2
362,025	"	4	4	Do. 4 p.c. Deb. ...	93—98*	−2
335,000	"	5	5	Do. 5 p.c. Deb. ...	100—105*	−2
357,900	Feb. 19	7½	6⅜	Brighton, &c., 6 p.c. Con. ...	103—103	..
659,955	"	6⅜	5¾	Do. 5 p.c. Con. ...	98—103	...
205,500	"	6	6	Do. 6 p.c. 'B' Pref. ...	103—108	...
855,000	Mch. 11	7	8	British Ord.	90—100	..
100,000	June 17	7	7	Do. 7 p.c. Pref.	118—123*	−2
350,000	"	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	110—115*	..
120,000	"	4	4	Do. 4 p.c. Red. Deb.	75—85*	−2
450,000	"	5	5	Do. 5 p.c. Red. Deb.	93—98*	−7
100,000	22 May '33	6	4	Cape Town, Ltd.	½—¾	...
100,000	6 Nov. '33	4½	4½	Do. 4½ p.c. Pref.	½—¾	...
150,000	June 17	4½	4½	Do. 4½ p.c. Deb.	52—57*	−1
626,860	Jan. 29	6	5 3/16	Cardiff Con. Ord.	103—108	...
237,860	June 17	5	5	Do. 5 p.c. Red. Deb. ...	95—100*	...
98,936	Apl. 8	2/—	2/-	Colombo Ord.	1½—1½	...
24,510	"	1/4⅛	1/4⅛	Do. 7 p.c. Pref.	19/6—21/6	...
739,453	Mch. 26	-/11.48	-/11.48	Colonial Gas Assn. Ltd. Ord. ...	14/6—16/6	...
296,144	"	1/3.30	1/3.30	Do. 8 p.c. Pref.	20/—22/-	...
1,775,005	Jan. 29	4	2	Commercial Ord.	45—50	...
140,000	Feb. 19	4	4	Do. 4 p.c. Red. Pref. ...	87—92	...
620,000	June 10	3	3	Do. 3 p.c. Deb.	61—66	...
286,344	Feb. 19	5	5	Do. 5 p.c. Deb.	97—102	...
200,000	"	3½	3½	Do. 3½ p.c. Red. Deb. ...	93—98	...
807,560	Feb. 12	7	7	Croydon sliding scale	90—100	−2½
644,590	"	5	5	Do. max. div.	85—90	...
620,385	Dec. 7	5	5	Do. 5 p.c. Deb.	98—103	−2
208,660	Feb. 19	5	5	Dudley, Brierley Hill & Dist. Ord.	98—103	...
82,275	"	5	5	Do. 5 p.c. Con. Pref. ...	93—98	...
79,000	"	3½	3½	Do. 3½ p.c. Red. Deb. ...	93—98	...
239,000	Jan. 29	5	88/6	East Hull Ord. 5 p.c.	70—80	...
187,215	Feb. 12	5½	5½	East Surrey Ord. 5 p.c. ...	93—98	...
176,211	June 17	5	5	Do. 5 p.c. Deb. ...	97—102*	−3
250,000	Nov. 13	8	4	Gas Consolidation Ord. 'B' ...	15/—17/-	...
250,000	May 13	4	4	Do. 4 p.c. Red. Cum. Pref.	15/—17/-	...
19,152,410	Jan. 29	5⅜	3⅜	Gas Light & Coke Ord. ...	11/6—12/6a	−/3
2,600,000	"	3½	3½	Do. 3½ p.c. max.	55—60	...
4,477,106	"	4	4	Do. 4 p.c. Con. Pref. ...	82—87	..
2,993,000	Jan. 2	3½	3½	Do. 3½ p.c. Red. Pref. ...	83—88	−2
8,602,497	June 3	3	3	Do. 3 p.c. Con. Deb. ...	63—68	...
3,642,770	"	5	5	Do. 5 p.c. Red. Deb. ...	100—105	...
3,500,000	"	4½	4½	Do. 4½ p.c. Red. Deb. ...	95—100	−2
700,000	Mch. 11	3½	3½	Do. 3½ p.c. Red. Ded. ...	85—90	−2
270,466	Feb. 19	6	6	Harrogate New Cons.	93—98	...
157,500	Apl. 8	‡1/-	‡1/-	Hong Kong and China Ord. ...	½—¾	...
5,600,000	May 13	4	8	Imperial Continental Cap. ...	40—50	−2½
172,810	Jan. 29	3½	3½	Do. 3½ p.c. Red. Deb. ...	70—75	...
63,480	Dec. 18	3	3	Maidstone 3 p.c. Deb.	55—60	...
45,000	June 10	18	†10	Malta & Mediterranean ...	88—98	−4
				Metropolitan (of Melbourne) ...		
392,000	Apl. 1	5½	5½	5½ p.c. Red. Deb.	95—100	+4½
231,977	Feb. 19	5	5	M.S. Utility 'C' Cons.	77—82	...
968,658	"	4	4	Do. 4 p.c. Cons. Pref. ...	82—87	−1
390,076	Dec. 18	4	4	Do. 4 p.c. Deb. ...	87—92	...
148,955	Dec. 18	5	5	M.S. Utility 5 p.c. Deb. ...	103—108	...
125,000	Jan. 2	3½	3½	Do. 3½ p.c. Red. Bds. ...	90—95	...
675,000	May 6	†4	†4	Montevideo, Ltd.	58—63	...
250,000	Mch. 18	7½	5 7/10	North Middlesex 6 p.c. Con. ...	103—108	...
396,160	Jan. 29	5	5	Northampton 5 p.c. max. ...	97—102	...
300,000	Apl. 29	9	7	Oriental, Ltd.	113—118	...
468,537	June 3	7	8	Plymouth & Stonehouse 5 p.c.	113—118	...
621,667	Feb. 5	8½	8⅛	Portsmouth & Gosport Cons.	105—110	...
241,446	May 6	5	5	Do. 5 p.c. max.	82—87	...
73,350	"	5	5	Do. 5 p.c. Pref.	88—93	...
75,000	"	4	4	Do. 4 p.c. Pref.	75—80	...
114,000	Feb. 5	5	5	Preston 5 p.c. Pref.	88—93	...
247,966	June 17	4	4	Primitiva 4 p.c. Cons. Deb. ...	91—96*	−2
625,959	Jan. 15	4	4	Do. 4 p.c. Red. Deb. ...	91—96	...
15,000	Mch. 11	6	6	San Paulo 6 p.c. Cum. Pref. ...	4½—6½	−2½
441,275	Apl. 29	1/1½	1/1½	Severn Val. Gas Cor. Ld. Ord.	16/6—18/6	...
460,810	Mch. 11	-/10⅛	-/10⅛	" " 4½ p.c. Cum. Pref. ...	16/6—18/6	...
133,201	Feb. 12	8½	5	Shrewsbury 5 p.c. Ord. ...	105—115	..
9,000	June 17	†4	‡5	South African Ord.	3½—4½*	−‡
1,996,297	Apl. 29	1/2⅜	1/	South East'n Gas Cn. Ld. Ord.	12/6—14/6	...
1,000,000	Mch. 4	-/10⅛	-/10⅛	Do. 4½ p.c. Red. Cum. Pref.	14/—16/-	...
769,191	"	4	4	Do. 4 p.c. Cum. Pref. ...	13/—15/-	...
450,000	Feb. 12	4	4	Do. 4 p.c. Red. Deb. ...	95-100	...
150,000	"	3½	3½	Do. 3½ p.c. Red. Deb. ...	89—94	...
6,709,895	"	5	4	South Met. Ord.	38—48	−2
1,135,812	"	6	6	Do. 6 p.c. Irred. Pref. ...	109—114	...
850,000	"	4	4	Do. 4 p.c. Irred. Pref. ...	82—87	..
1,895,445	Dec. 27	3	3	Do. 3 p.c. Deb.	63—68	−5
1,000,000	Jan. 15	5	5	Do. 5 p.c. Red. Deb. ...	98—103	...
600,000	"	3⅜	3⅜	Do. 3⅜ p.c. Red. Deb. ...	92—97	...
1,543,795	Feb. 5	6	3	South Suburban Ord. 5 p.c. ...	70—75	..
512,925	"	5	5	Do. 5 p.c. Pref.	90—95	...
500,000	"	4	4	Do. 4 p.c. Pref.	78—83	−4
250,000	"	3⅜	3⅜	Do. 3⅜ p.c. Red. Pref. ...	85—90	...
888,587	June 10	5	5	Do. 5 p.c. Deb.	98—103	...
250,000	"	4	4	Do. 4 p.c. Deb.	85—90	...
200,000	Feb. 12	3½	3½	Do. 3½ p.c. Red. Deb. ...	87—92	...
427,859	Apl. 15	-/9⅜	1/2⅜	S. Western Gas & Water Ord.	13/—15/-	...
160,523	"	-/10⅛	-/10⅛	Do. 4½ p.c. Red. Cum. Pref.	15/—17/-	..
110,000	June 17	4	4	Do. 4 p.c. Red. Deb. ...	85—90*	−5
750,541	Feb. 5	5	5½	Southampton Ord. 5 p.c. ...	73—78	−4
148,836	June 17	4	4	Do. 4 p.c. Deb.	82—87*	−5
350,000	Feb. 12	5½	5½	Swansea 5½ p.c. Red. Pref. ...	97—102	...
200,000	Dec. 18	3½	3½	Do. 3½ p.c. Red. Deb. ...	90—100	...
1,076,490	Feb. 26	6½	5	Tottenham and District Ord....	87—92	..
409,835	"	5½	5½	Do. 5½ p.c. Pref.	100—105	−2
62,235	"	5	5	Do. 5 p.c. Pref.	92—97	−1
453,380	June 10	4	4	Do. 4 p.c. Deb.	85—90*	...
1,247,505	May 20	4	6	U. Kingdom Gas Cor. Ord. ..	13-/—15/-	...
1,085,952	May 13	4½	4½	De. 4½ p.c. 1st Cum. Pref. ...	14/—16/-	—, 6
772,709	"	4	4	Do. 4 p.c. 1st Red. Cum. Pf.	14/—16/-	...
745,263	June 17	4½	4½	Do. 4½ p.c. 2nd Non-Cum. Pf.	12/6—14/6*	—/6
1,093,656	Mch. 18	3½	3½	Do. 3½ p.c. Red. Deb. ...	83—88	...
378,106	Mch. 11	7	7	Uxbridge, &c., 5 p.c.	95—100	...
133,010	"	5	5	Do. 5 p.c. Pref.	95—100	...
1,371,138	Feb. 5	6½	3½	Wandsworth Consolidated ...	68—73	...
2,525,768	"	4	4	Do. 4 p.c. Pref.	73—78	−5
1,343,964	June 17	5	5	Do. 5 p.c. Deb.	95—100*	−3
383,745	"	4	4	Do. 4 p.c. Deb.	85—90*	−2
400,000	"	3⅜	3⅜	Do. 3⅜ p.c. Red. Deb. ...	87—92*	−3
558,342	Jan. 29	6¼	6	Watford and St. Albans Ord. ...	95—100	...
200,000	"	5	5	Do. 5 p.c. Pref.	93—98	...
200,000	"	5½	5½	Do. 5½ p.c. Pref.	100—105	...
200,000	"	4	4	Do. 4 p.c. Rd. Pf. (1973/8)	85—90	...
100,000	"	33/4⅜	4	Do. 4 p.c. Red. Pf. (1959)	93—98	...
400,000	June 10	3½	3½	Do. 3½ p.c. Red. Deb. ...	85—90	...

a.—The quotation is per £1 of Stock. * Ex. Div. † Paid free of income-tax. ‡ For year. § Actual.

Supplementary List and Provincial Exchanges overleaf.

STOCK AND SHARE LIST—Contd.

Supplementary List, not Officially Quoted, London

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Nominal Quotations June 21.	Rise or Fall on Week
202,152	Mch. 18	5	5	Ascot Ord.	80—85	...
128,182	Dec. 27	5	5	Do. 5 p.c. Pref. ...	88—93	...
31,035	Mch. 4	-/9/32	-/9/32	Associated Utilities 4 p.c. Pref.	15/—17/-	...
100,000	Dec. 18	3½	3½	Do. 3½ p.c. Red. Deb. ...	90—95	...
17,000	Feb. 19	8	8	Bognor Orig. Ord. 'A'	102—112	...
62,210	,,	8	8	Do. New Add. 'A' ...	102—112	...
87,160	,,	7	7	Do. New 7 p.c. max. ...	95—105	...
37,440	Jan. 29	10	10	Cam. Univ. & Town 10 p.c. max.	145—155	...
125,970	,,	7	7	Do. 7 p.c. max.	100—110	...
39,025	,,	5	5	Do. 5 p.c. max.	80—90	...
96,410	Jan. 29	4½	4½	Cardiff 4½ p.c. Pref.	90—95	...
55,520	Feb. 19	6	6	Colchester 6 p.c. Pref.	100—105	...
90,550	Mch. 18	5	5	Do. 5 p.c. Deb. ...	98—103	...
150,000	Feb. 12	4	4	Croydon 4 p.c. Pref.	82—87	...
130,000	Dec. 27	4	4	Do. 4 p.c. Deb.	87—92	...
65,000	Mch. 4	7½	6 7/32	Eastbourne 'A' 5 p.c.	100—105	...
198,000	,,	6	5 5/32	Do. 'B' 3½ p.c.	83—88	...
112,312	,,	5	5	Do. 5 p.c. Pref.	90—95	...
130,000	Dec. 18	5	5	Do. 5 p.c. Deb.	98—103	...
130,500	Feb. 19	7½	7½	Exeter New Ord. (£10)	12—14	...
24,000	Aug. 21	8½	8½	Gt. Yarmouth 8½ p.c. max. (£30)	15—20	...
59,400	,,	7½	7½	Do. 7½ p.c. max. (£30) ...	10—15	...
51,160	June 10	5½	5½	Do. 5½ p.c. Deb.	100—105	...
152,600	Feb. 26	8	9	Guildford Cons.	110—120	...
54,055	,,	5	5	Do. 5 p.c. Pref.	90—95	...
68,250	June 17	5	5	Do. 5 p.c. Deb.	95—100*	-8
156,600	Feb. 19	7	5	Hampton Court Cons. ...	75—85	...
86,046	June 17	5	5	Holyh'd&N.W.G.&W.Cpn.Ord.	13/—15/-*	-/6
80,000	Feb. 12	4	4	Lea Bridge 4 p.c. Pref.	75—80	...
60,000	,,	6	6	Do. 6 p.c. Pref.	105—115	...
94,876	June 17	4	4	Do. 4 p.c. Deb.	85—90*	-3
73,620	Mch. 18	8½	8½	Luton Cons. 'A'	115—125	...
107,960	Feb. 26	4	5½	Mid Kent Ord. (£10)	7½—8½	...
230,940	Feb. 5	10	10	Oxford & District Ord. ...	135—145	...
47,112	,,	5	5	Do. 5 p.c. Pref.	85—90	...
50,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	100—105	...
126,193	May 13	7½	7½	Peterborough Ord.	138—148	...
64,990	Mch. 18	7	7	Redditch Ord.	100—110	...
166,850	Feb. 19	8	8	Romford Ord.	108—118	...
60,000	,,	4	4	Do. 4 p.c. Pref.	85—90	...
44,000	Mch. 18	5	5	Do. 5 p.c. Deb.	97—102	...
25,570	Feb. 12	5½	5½	Rugby 5½ p.c. Pref.	100—110	...
25,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	100—105	...
42,750	De.. 11	5½	5½	Do. 5½ p.c. Deb.	102—107*	-3
110,950	Feb. 26	8	8	Ryde Ord.	100—110	...
270,086	Mch. 18	7	7	Slough Ord.	98—103	...
21,000	June 10	5	5	Do. 5 p.c. Deb.	97—102	...
28,872	May 13	5½	5½	S. Midland Gas Cpn. Ltd. Ord.	14/—16/-	...
28,866	Mch. 18	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	14/—16/-	...
127,228	Feb. 19	5	7	Swindon Cons.	75—80	...
60,425	Dec. 18	5	5	Do. 5 p.c. Deb.	95—100	...
64,380	June 17	5	5	Torquay & Paignton 5 p.c. Pref.	83—88*	-2
130,000	Feb. 12	5	5	Wakefield Ord.	85—95	...
81,650	,,	5	5	Do. 5 p.c. max.	75—80	...
82,000	Jan. 29	6	6	Weymouth Ord.	82—87	...
273,626	Feb. 12	7	7	Wolverhampton Cons. Ord. ...	115—120	...
98,384	,,	6	6	Do. 6 p.c. Pref.	105—115	...
160,000	June 17	5½	5½	Do. 5½ p.c. Red. Deb. ...	98—103*	-2
106,490	Mch. 18	5½	5½	Wrexham Ord	75—85	...
90,000	Dec. 18	5	5	York 5 p.c. Red. Deb.	95—100	...
133,640	Feb. 19	6	6	Yorktown (Cam.) 5 p.c. Cons.	82—87	...
120,000	,,	5	5	Do. 5 p.c. Pref.	85—90	...
35,000	June 17	5½	5½	Do. 5½ p.c. Deb.	103—108*	-2

BRISTOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations June 21.	Rise or Fall on Week.
347,756	Feb. 1	5	6	Bath Cons.	100—105	-3½
1,667,250	Feb.	5	5	Bristol, 5 p.c. max.	90—95	-6
120,420	June 17	4	4	Do. 1st 4 p.c. Deb.	95—98*	-1
415,250	,,	4	4	Do. 2nd 4 p.c. Deb. ...	95—98*	-1
328,790	,,	5	5	Do. 5 p.c. Deb.	109—112*	-5½
274,000	Feb. 26	5	5	Newport (Mon.) Ord.... ...	91—94	...
13,200	Mch. 26	7	8½	Pontyp'l Gas & W. 10 p.c. 'A'	11½—12½	...
13,600	,,	5	6	Do. 7 p.c. 'B'	9½—10½	-½
40,000	,,	5	6	Do. 7 p.c. 'C'	9½—10½	-½
140,778	Feb. 12	5	5	Weston-super-Mare Cons. ...	88—92	-4
64,338	Dec. 27	4	4	Do. 4 p.c. Deb.	90—95	...
33,340	,,	7½	7½	Do. 7½ p.c. Deb.	140—150	...

LIVERPOOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations June 21.	Rise or Fall on Week.
157,150	Feb. 5	5	6½	Chester 5 p.c. Ord.	98—101	...
92,500	June 17	4	4	Do. 4 p.c. Pref.	83—87*	-1
36,430	,,	3½	3½	Do. 3½ p.c. Deb.	84—87*	-1
41,890	,,	4	4	Do. 4 p.c. Red. Deb. ...	94—98*	-1
2,167,410	Feb. 19	6	6	Liverpool 5 p.c. Ord.	100—102	-6
245,500	June 17	5	5	Do. 5 p.c. Red Pref. ...	99½—102½*	...
306,083	July 17	4	4	Do. 4 p.c. Deb.	99—101	...
106,280	Feb. 5	10	8	Preston 'A' 10 p.c.	160—170	...
188,219	,,	7	7	Do. 'B' 7 p.c.	115—125	...

NEWCASTLE EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations June 21.	Rise or Fall on Week.
122,577	Feb. 19	7	7	Blyth 5 p.c. Ord.	113—118	...
732,000	Feb. 19	4	4	Hartlepool G. & W. Cn. & New	62—64	-3
2,430,267	Feb. 5	5	5 7/10	Newcastle & Gateshead Con.	17/—18/a	...
682,856	,,	4	4	Do. 4 p.c. Pref.	85—86	...
776,706	Dec. 27	3½	3½	Do. 3½ p.c. Deb.	82—87	...
277,285	April 24	5	5	Do. 5 p.c. Deb. '43 ...	97—102	...
332,351	Feb. 5	6	6	Sunderland 6 p.c. max. ...	111—113	...

NOTTINGHAM EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations June 21.	Rise or Fall on Week.
542,270	Feb. 12	6	9	Derby Con.	103—108	...
55,000	June 10	4	4	Do. 4 p.c. Deb.	96—102	...
20,000	Dec. 18	5	5	Long Eaton 5 p.c. Pref. ...	9—11	...
80,000	,,	5	5	Do. 5 p.c. Deb. ...	100—105	...

SHEFFIELD EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations June 21.	Rise or Fall on Week.
10,000	Feb. 19	10	10	Great Grimsby 'A' Ord. ...	170—180	...
6,500	,,	10	10	Do. 'B' Ord. ...	170—180	...
79,000	,,	10	10	Do. 'C' Ord. ...	160—170	...
1,806,339	Feb. 26	6½	6½	Sheffield Cons.	123—126	...
95,000	Jan. 2	4	4	Do. 4 p.c. Deb.	98—100	...

a The quotation is per £1 of Stock.
* Ex. div. ‡ For year.

THIS WEEK'S ADVERTISERS

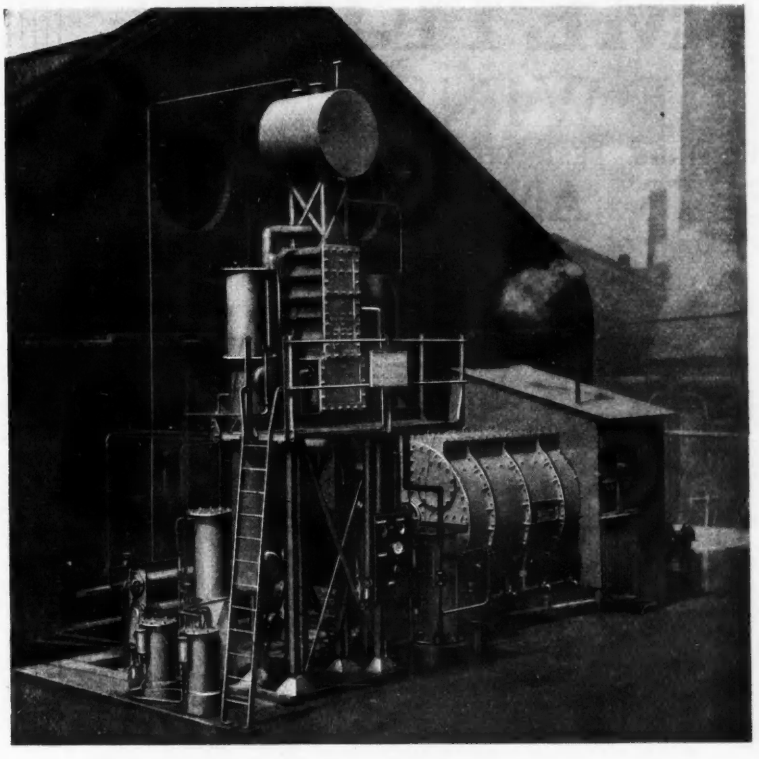
	PAGE
Abbott, Birks, & Co., Ltd.	646
A.C.E. Machinery, Ltd.	648
Alder and Mackay, Ltd.	680
Ashmore, Benson, Pease, & Co., Ltd. ...	644
Averill C. R., Ltd.	653
Baldwins, Ltd.	642
Bale & Church, Ltd.	681
Blakeley, Firth, Sons, & Co., Ltd. ...	Cover II, 681
Broadbent, J. C., & Co., Ltd.	681
Brotherhood, Peter, Ltd.	655
Clayton, Son, & Co., Ltd.	642
Clough (Croydon), Ltd.	Cover IV
Cochran & Co. (Annan), Ltd.	643
Cowan, W. & B.	Cover III
Dempster, R. & J., Ltd.	641
Dempster, Robert, & Sons, Ltd. ...	...664, 681
Derbyshire Silica Firebrick Co., Ltd. ...	652
Diaphragm & General Leather Co., Ltd.	... 684
Donkin Co., Ltd. (The Bryan) ...	Cover II
Drakes, Ltd.	645
Ellison Insulations Ltd.	681
Gas Meter Co., Ltd.	Cover IV
Gas Purification and Chemical Co., Ltd.	... 681
Gibbons Bros., Ltd.	Supp. II
Glover, Thos., & Co., Ltd.	656

	PAGE
Holmes, W. C., & Co., Ltd.	683
Humphreys & Glasgow, Ltd.	654
Incandescent Heat Co., Ltd.	653
Keith Blackman, Ltd.	684
King, Walter, Ltd.	680
Kleenoff Co.	681
Lench, Thos. Wm., Ltd.	681
Macpherson, Donald, & Co., Ltd.	650
Main, R. & A., Ltd.	670
Mewburn, Ellis, & Co.	681
Ministry of Supply	647
National Savings Movement	679
New Bowson Coal Co.	680
Oxley Engineering Co., Ltd.	...Supp. I
Parkinson Stove Co., Ltd.	667
Parkinson, W., & Co.	656
Peebles & Co., Ltd.	652
Radiation, Ltd.	...668, 669
Reavell & Co., Ltd.	680

	PAGE
Slingsby, Walter, & Co., Ltd.	648
Smith, Thos., & Sons (Rodley), Ltd.	652
South Hetton Coal Co., Ltd.	Cover IV
South Metropolitan Gas Company	675
Spencer-Bonecourt, Ltd.	650
Stanton Ironworks Co., Ltd.	682
Strachan & Henshaw, Ltd.	681
Sutcliffe, Speakman & Co., Ltd.	644
Trotter, Haines, & Corbett, Ltd.	681
Wakelin, F. H., Ltd.	681
Walker, C. & W., Ltd.	646
Walsall Locks & Cart Gear Ltd.	681
Wellington Tube Works, Ltd.	Cover IV
West's Gas Improvement Co., Ltd.	676
Whessoe Foundry & Engineering Co., Ltd....	649
Wilson (George) Gas Meters, Ltd.	Cover I
Woodall-Duckham Co., Ltd.	663
Wright, Alex., & Co., Ltd.	651
Appointments Vacant and Wanted	682
Company Notices	682
Contracts Op n	682
Patents	681
Plant, &c.	681
Plants, &c., Wanted and for Sale	682
Publications	681

GAS JOURNAL, JUNE 26, 1940

VOL. 230. 92nd YEAR. No. 4023.



Gas Undertakings and "National Service"

May we draw your attention to the following:—

We shall be pleased to quote you for plant to produce Benzole and Toluole.

An existing "Dempster" Benzole Plant can be converted to produce Benzole and Toluole.

R. & J.
Dempster, Ltd.,
Gas Plant Works,
MANCHESTER 10.

London Office—
34, Victoria St., Westminster, S.W.1

THE MATERIAL FOR

GAS METERS

BALDWINS'

STAFFORDSHIRE BEST CHARCOAL

TINNED SHEETS AND TINPLATES

HEAVILY COATED WITH PURE TIN

ALL STAFFORDSHIRE PLATES are Tinned by a special process, peculiar to BALDWINS LIMITED, which ensures a solid, thoroughly even coating, and a real amalgamation between the Steel and the Tin.

Makers of the famous

COOKLEY K

Known throughout the World as the finest Tinned Sheet produced

Also makers of the following well-known Brands:—

"WILDEN" **"ARLEY"**
"WOLVERLEY" **"UNICORN," &c.**

BALDWINS LIMITED

(Midland Branch), Wilden Ironworks, Stourport-on-Severn, Worcs., England

Telephone: Stourport 10.

CLAYTON SON & CO., LTD., HUNSLET, LEEDS

11 WELDED STEEL TAR STORAGE TANKS

"straightaway" installation

FOR EMERGENCY BUILDINGS

Boilers like these need no erecting in the ordinary engineering sense of the word. You simply make the gas and water connections and start up — before the boiler house itself is finished, if you like.

CONTRACTORS FOR COMPLETE BOILER HOUSE INSTALLATIONS.

COCHRAN

COCHRAN & CO., ANNAN, LTD., ANNAN, SCOTLAND. London Office: 34, VICTORIA STREET, S.W.1.

TAS/Ch 142

Welded

Large Mild Steel Welded Purifier Installation comprising 24 boxes, each 35 ft. sq. × 25 ft. deep, total weight of steelwork 2,500 tons.

PURIFIERS
GASHOLDERS
CONDENSERS
PIPES, ETC., ETC.

Your enquiries for new plant, inspections and repairs are solicited.

ASHMORE, BENSON, PEASE & CO., LTD.
PARKFIELD WORKS - - - - STOCKTON-ON-TEES.

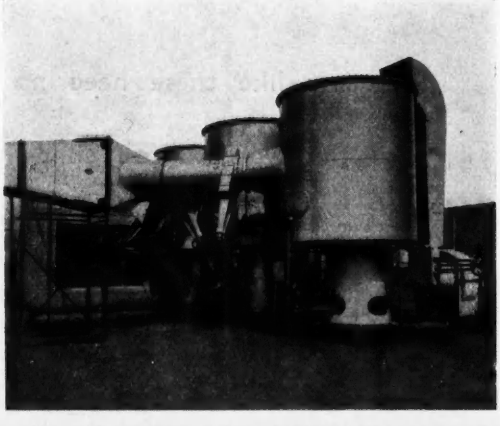
BENZOL RECOVERY BY ACTIVATED CARBON

HAS NO RIVAL.
IT IS IN A SEPARATE FIELD.

SOLVENT RECOVERY
by **OUR PROCESS** is a
PAYING PROPOSITION.

The plant illustrated
REPAID ITS COST
IN A FEW YEARS!

We should like to tell you **MORE**
but should prefer to do it
ON THE SPOT.



SUTCLIFFE, SPEAKMAN & CO., LTD.
LONDON OFFICE: 66, VICTORIA STREET, S.W.1
WORKS: LEIGH . . . LANCS

Solving War-time Problems

REDUCTION of operating costs, simplification of existing plants, maintenance of an adequate Gas supply, and means for increasing output at short notice, are among the many problems which face Gas Undertakings in these difficult days. Drakes Limited have successfully solved these and kindred problems from the Gas Industry's earliest days. With such experience, backed by ample resources and a staff of highly skilled technicians, Drakes Limited are ready to find new solutions to your most pressing problems.

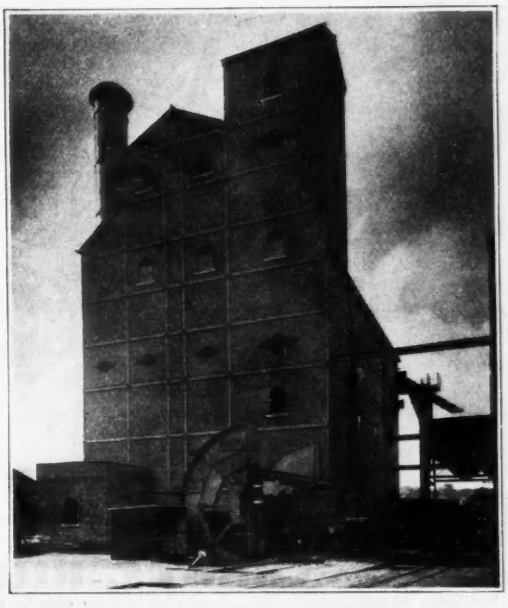


Illustration of Charging Stage at Boiler Side in the Vertical Retort Installation, exterior of which is shown at top right.

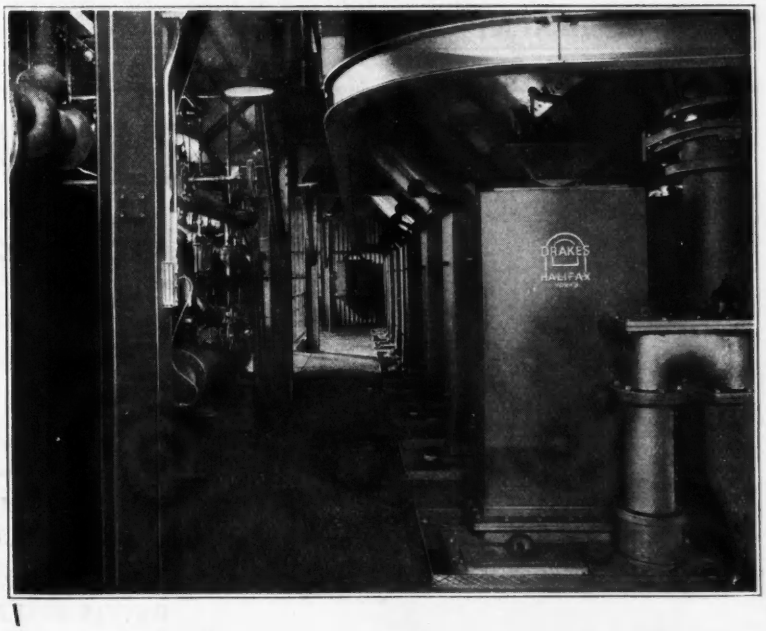


Illustration above shows the Permanent Gable and Wagon Tipper of a Vertical Retort Installation recently erected by Drakes Limited.

COMPLETE VERTICAL & HORIZONTAL RETORT INSTALLATIONS

COAL AND COKE HANDLING, SCREENING AND STORAGE PLANTS

CONDENSERS, WASHERS, SCRUBBERS, PURIFIERS

RIVETED OR WELDED STRUCTURAL WORK

Drakes

LIMITED · HALIFAX · YORKS

Telephone: HALIFAX 4701, P.B. Ex. Day and Night. *Grams:* DRAKETED, HALIFAX

OLD AS THE GAS INDUSTRY ITSELF

A.R.P.—SAFETY FIRST!

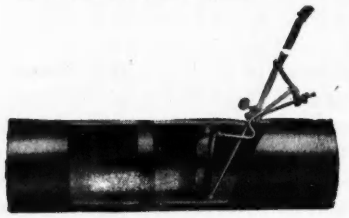
The Goodman Improved Gas Main Stopper

FOR SHUTTING OFF GAS IN MAINS WHILE REPAIRS OR ALTERATIONS ARE BEING MADE

MATERIALS FULLY GUARANTEED

The Z-Handle simply and surely and quickly places the stopper in the correct position and the Patented Locking Sleeve locks the Stopper in the pipe and makes the shut off secure against jarring

It will hold for a day or a week.



WHEN LOCKED IN PLACE IT HOLDS

Delivery Ex Stock All Sizes from 4" to 36"

It is **quickly operated.** A **24 inch stopper** can be inserted, placed in position and gas shut off in **thirty seconds** after the plug has been removed.

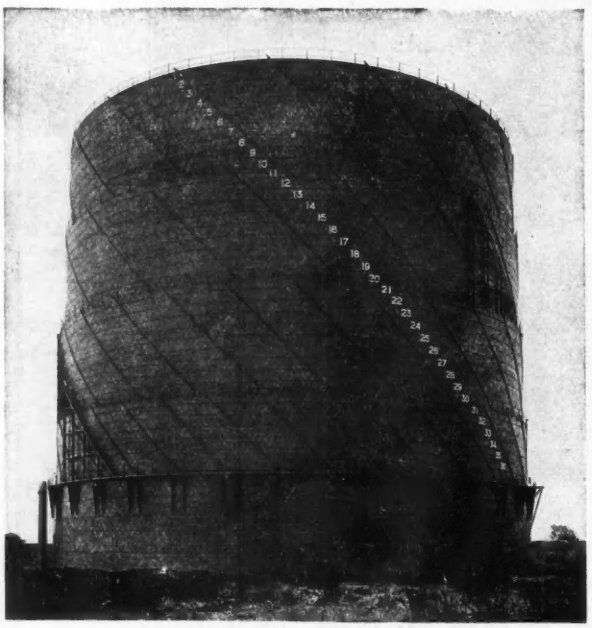
Telephone— WATerloo 4066-7 (4 lines)

ABBOTT, BIRKS & CO. LTD.

THE RELIABLE SERVICE ENGINEERS

90-91, BLACKFRIARS ROAD, LONDON, S.E.1

Telegrams— ABBIRKO, SEDIST, LONDON



CAPACITY, 3 MILLION CUBIC FEET

C. & W. WALKER

LIMITED

DONNINGTON

Nr. WELLINGTON

—SHROPSHIRE

'Phone: Lilleshall-Shropshire Nos. 34 & 35 (2 lines)

'Grams: "Fortress," Donnington, Shropshire

SPIRAL GASHOLDERS

RIVETED OR ELECTRICALLY WELDED

BRITISH MATERIALS

BRITISH LABOUR

HIGHEST QUALITY IN WORKMANSHIP

70 YEARS' EXPERIENCE

MILBOURNE SELF-LUBRICATING ROLLER CARRIAGES

LONDON OFFICE—Temporary Address: DONNINGTON, WELLINGTON, SHROPSHIRE.

1,000,000 TONS OF NEW WARSHIPS

Big Addition to Navy "in Few Months"

The Admiralty announced to-day that during the next few months the Royal Navy will receive a further large increase in strength, comprising every category of warship, from battleships to motor torpedo boats, and a very large number of auxiliary craft.

As a result of the acceleration of work in the shipyards the output of new construction is increasing progressively, it was stated.

Tonnage of warships being built in British shipyards totals nearly 1,000,000.

The balance of naval strength in favour of the Allies is now far greater than at the beginning of the war.

All losses suffered by the Royal Navy have been, and will continue to be announced without delay.

Naval Strength

The strength of the British Empire navies when the war began, and the losses suffered, are:

17 capital ships, 1 lost.
7 aircraft carriers, 2 lost.
62 cruisers, 2 lost.
185 destroyers, 38 lost.
58 submarines, 8 lost.
186 minesweepers, sloops, patrol vessels and gunboats, 6 lost.

Since the start of war, in addition to reinforcements of warships of all classes, except battleships, the Navy have been strengthened by more than 50 armed merchant cruisers, of which one has been lost, and more than 1300 minor vessels and auxiliary craft, of which 56 have been lost.

The French Navy is a very powerful and rapidly-growing force, and the Allied fleets have been reinforced by the active co-operation of Polish, Norwegian and Dutch naval forces.

Germany's Loss

The German Navy have suffered the destruction of a high proportion of their effectives.

Nine months of war, it was stated, shows that concentrated air power, in close proximity to its own air bases, can inflict losses on the less strongly armoured naval units. It has failed, notwithstanding, to annul the decisive advantage exercised by sea power.

London's Old Metal

The London County Council have released 730 tons of old metal, including iron, brass, copper and lead, in response to the Minister of Supply's appeal for metal for war work.

It comes from railings round parks and garden squares and bandstands.

More than 100 of the Council's parks and open spaces have been surveyed, and 7100 yards of fencing, weighing approximately 123 tons, are being removed.

Courage Beat Might At Dunkirk—French Officer Tells Factory Workers

M. WEIL CURIEL, French Liaison Officer with the B.E.F. and a Captain in the Royal Engineers, told workers at a Midland factory yesterday how British courage had matched itself against the colossal might of the German military machine during the great evacuation from Belgium.

Bravery and military aptitude, he said, had been beaten by overwhelming odds, treachery and unpreparedness. But he had faith in the final outcome of the war if everyone did not merely "walk to war, but rushed to victory."

Captain Curiel was in Flanders throughout the Belgian campaign.

"When you feel that you are not able to carry on with your job, you should think how your brothers and husbands fought during that time," he said.

BATTLE OF THE BRIDGE

"Once, I was with a party engaged on blowing up a bridge. There were 25 Royal Lancers in the section. We saw motor-cycles and armoured cars approaching and shouted to them, 'Look sharp, we are going to blow up the bridge.' When they got nearer, we saw they were Germans. Our first thought was to run, but the officer called out, 'Are you going to let us fight them alone?'

"All the men came back with their rifles and three guns and held the Germans until the bridge was down.

It was not courage that was lacking or military ability, because the retreat was always made in perfect order. We did not lose the least thing —no, a lorry, or a Bren gun or a rifle—until near Dunkirk the order was given to destroy our equipment.

"We met with treachery. Some Brussels gates bridges had to be blown up and I was sent with the order. When I arrived I found no one guarding them, no soldier, nearby, nothing. It took me some time to find the Belgian Headquarters. When I saw the commander he said it was a pity I had come too late. Two hours before he had been offered to take away all the demolition apparatus. No one could disbelieve who had given the foolish order."

AT ALL COSTS WE MUST WIN!

Mr. Amery's Appeal to the Spirit of Magna Carta

Yesterday was the 725th anniversary of the signing of Magna Carta at Runnymede. Broadcasting last night under the title of "Magna Carta—Then and Now," Mr. L. S. Amery, Secretary of State for India and Burma, said:

It was no theoretical freedom that the barons at Runnymede claimed for themselves and for a whole nation, but the truer freedom which comes from the enforcement of the law on all without regard to privilege or power, from the certainty of just and speedy decisions in the courts, from protection against arbitrary taxation. Liberty is, indeed, a meaningless thing except as a right adjustment between all the forces and elements in the national life. That adjustment must vary continuously with changing circumstances, and continuously demands fresh methods to preserve it.

The same need for continuous adjustment has governed the development of British freedom overseas. The principle of responsible self-government in essentially local matters which was laid down in Lord Durham's memorable report has developed in the case of the Dominions to a full-grown national stature and a complete equality of status with the Mother Country. They are to-day in the fullest sense of the word independent nations. But they are more, as we are more, than ordinary sovereign nations.

THE FUTURE OF INDIA

How many nations are there whose nominal independence is not in fact seriously limited by the economic pressure of more powerful neighbours? How many have we not seen succumb in these last few years and weeks to sheer brutal aggression? Against these dangers the nations of the British Commonwealth can look to a partnership, free yet assured, to maintain their mutual welfare in peace and defend their liberties in war. By their free action they are about to-day the price they set upon that partnership.

IS FREEDOM WORTH WHILE?

In all that I have said I have assumed that freedom is worth while. I have assumed that our highest aim is a national life which is something greater than any element in it, greater even than the State, and which can find room within itself for many independent manifestations of local and communal activity, for the free expression and organisation of opinion on all questions, as well as for the freedom of every individual to live his own life "by no man's leave underneath the Law."

I have assumed that we are dedicated to the ideal of a free Commonwealth in which national patriotism and the wider patriotism of the whole can find their fullest expression without any subordination of one to the other; in which free co-operation for defence for trade, for the development of all that exalts and enriches human life can take the place of coercion, and in which no attempt is made to force the infinite diversity of its peoples into a common mould.

Is that assumption justified? Can a nation or a Commonwealth based on these principles endure? Is freedom itself an ideal still worth pursuing? These are the questions which are at issue in the war of the world to-day. By the suppression of all freedom of political organisation and thought, by the cultivation of a ruthless fanaticism of brute force, and of an unscrupulous thirst for domination, Hitler and his associates and confederates have built up an engine of mechanised military power more terrible than anything yet dreamed of, and have launched it upon a world ill-prepared for submission and merciless an onslaught.

"NO TRUCE—ONLY VICTORY"

If that onslaught succeeds then it is the end of Magna Carta and all that it has stood for, not only

It shall not be!

DID you ever hear tell of Karl von Wiegand? He is the man who at this tremendous hour in the history of humanity steps out of obscurity into the limelight and assumes the role of Hitler's Charlie McCarthy, that celebrated ventriloquist's puppet.

Through von Wiegand, an American journalist of German descent, Hitler gives his message to us.

* * *

THAT message is simple. We can have peace. We can have it this morning or tonight, or at dawn tomorrow. But, of course, it must be peace dictated by Hitler.

It must be the sort of peace extended to the prisoner in the condemned cell.

* * *

HITLER says he does not want to smash the British Empire. But he desires to take those of our colonies which he covets, to disarm our country and to destroy our naval power.

He also plans to endow us with a Government whose personnel will be chosen and whose system will be laid down by Hitler himself.

* * *

Let it be said straightaway that any public man who had the audacity to arise in our midst and advocate such a policy of Peace by Surrender would be immediately torn into fragments by the fury of British public opinion.

Having made this plain, let us consider what the acceptance of a Hitler peace would mean to each one of us, man, woman, and child, in this country.

* * *

OUR country would be turned immediately into an immense factory. This factory would work twenty-four hours a day, seven days a week, producing arms and goods for the glorification and comfort of the German Reich.

Wages paid would be at starvation level. For the goods

Morrison Urges: Roll Up Your Sleeves

LATEST slogan adopted by Mr. Morrison, Minister of Supply, is "Roll up your sleeves."

Introducing a broadcast impression last night of how the arms speed-up was going in Britain, he said:

"The men and women who stand at these machines and benches and lathes are not tired, over-driven galley-slaves of the Victorian England. They are eager defenders of democratic freedom.

"Their tremendous effort must continue in its full intensity. Sooner or later, though, they will go on working seven days a week. The women in them will be quite, quite tired.

"In the German speed-up they have the quality, the sickness, the staggering, the accidents, finally the slowing down.

Must Not Be Over-Estimated

Mr. Morrison was speaking at a National Defence Public Interest Committee luncheon.

"The nation swung over almost instantaneously from something that was too like a peace stroke to a full war stroke. There have been marked and material increases in output."

The effect of this spurt must not, however, be over-estimated.

"Do not belittle it—it is great and it will help to preserve our cause. But do not expect the impossible of it," said Mr. Morrison.

TOYS AR... TO MAK...

...EN UP ...NS

A passenger lift ... France. For ... It grew old, and ... have it for ... The survey...

...wanted ...not

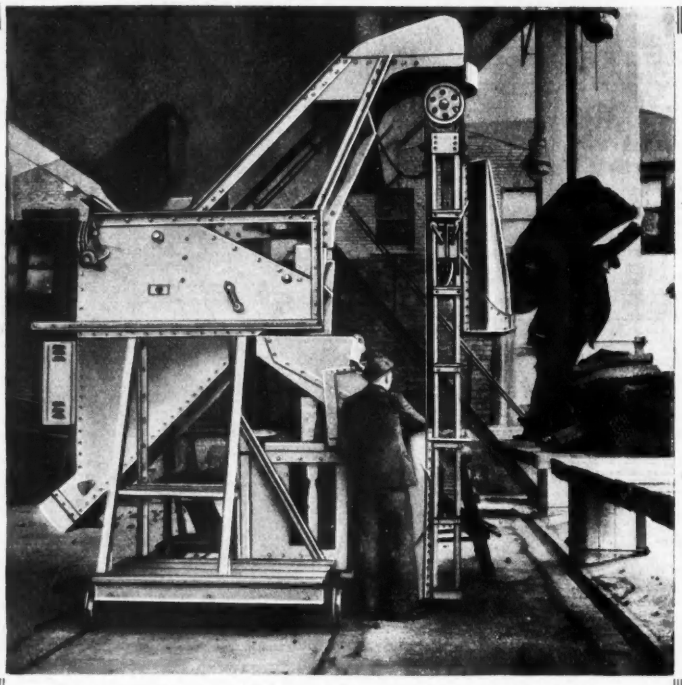
ROLL UP YOUR SLEEVES
GET IT DONE

More scrap makes steel for our defence

More steel for war material is urgently needed to make this island into an impregnable fortress. But for every hundred tons of steel, the furnaces need sixty tons of scrap! It's up to everyone of us to turn out every bit of old iron and steel in our homes and workshops. It must go to the steel furnaces *at once* to be re-formed into tanks, planes, guns, equipment . . .

Everything that you and your firm can do without *must go*—disused machinery, obsolete spares, process scrap, old railings, chains—anything made of iron or steel that can be spared. Comb it out! Sell it all to your scrap merchant this week—*now!* If in any difficulty, write to Iron & Steel Control, Steel House, London.

ELECTRIC SACK HOISTS.



THE LATEST DEVELOPMENT IN 'ACE' SCREENING AND DEBREEZING PRACTICE IS TO PROVIDE FOR

• **AUTOMATIC SACK HOISTING** •

THE ILLUSTRATION SHOWS ONE OF A BATCH OF 3 'ACE' DEBREEZING, WEIGHING, BAGGING AND SACK HOISTING UNITS SUPPLIED RECENTLY TO THE SOUTHGATE WORKS OF THE TOTTENHAM AND DISTRICT GAS CO.

THE SACK HOIST HAS DUPLICATE HOISTING PLATFORMS EACH PLACED ON OPPOSITE SIDES OF A VERTICAL STEEL TOWER, ARRANGED FOR SWIVELLING.

MOTION, PUSH BUTTON OPERATED, IS PROVIDED BY MEANS OF AN ELECTRIC WINCH MOUNTED IN THE HEAD OF THE STEEL TOWER.

ACE MACHINERY LTD.,
HARLEQUIN AVENUE,
GREAT WEST ROAD,
BRENTFORD, MIDDLESEX.
Telephone : Ealing 6262 (7 lines).

If you would have the Screen of Tomorrow consult ACE Today

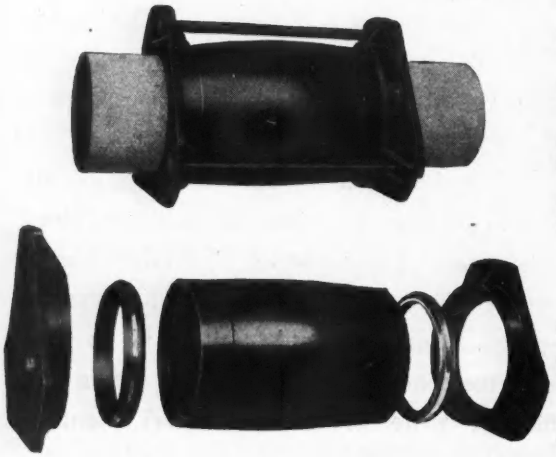
BE ALWAYS READY WITH—

A.R.P. THE 'WASK' MAIN COUPLING

For SPEEDY EMERGENCY REPAIRS that LAST for YEARS

ALLOWS FOR DEFLECTION OF THE MAIN AND MAINTAINS THE FULL BORE

NOTE :—



SOFT METAL JOINT RINGS WHICH MAKE A TIGHT JOINT ON BOTH OLD AND NEW MAINS WHICH WON'T CORRODE

EXTRA LONG CAST IRON SLEEVE ALLOWS PLENTY OF LATITUDE FOR UNSEEN CRACKS AND ROUGH MEASUREMENTS

STRONG MALLEABLE IRON FLANGES REDUCE WEIGHT AND INCREASE STRENGTH

CAN BE EASILY SLIPPED OVER OLD MAINS WITHOUT DISMANTLING, SAVING VALUABLE TIME

MADE IN SIZES FOR 3" TO 9" MAINS WITH 9" LONG SLEEVES AND 10" AND 12" MAINS WITH 12" LONG SLEEVES

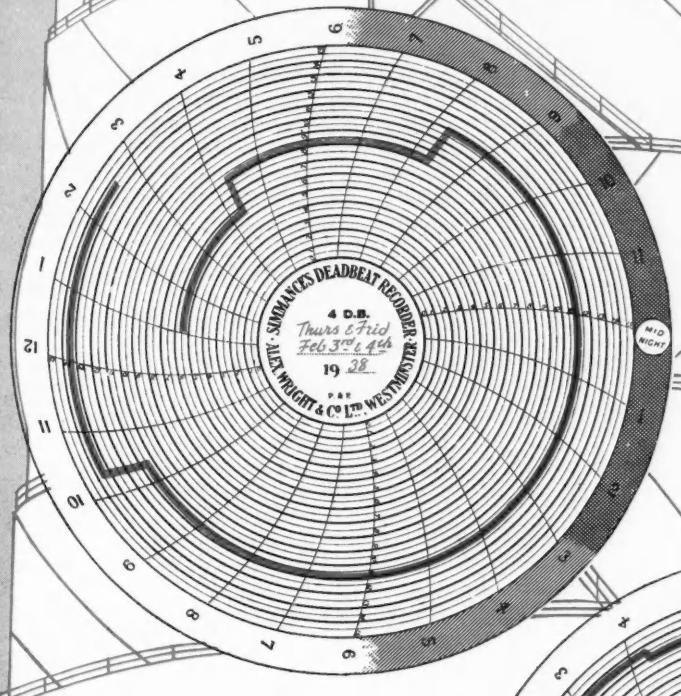
SO SIMPLE TO FIT THAT ANY AVERAGE VOLUNTEER CAN USE THEM.

Made by :—

WALTER SLINGSBY & Co. LTD.
WOODHOUSE WORKS, KEIGHLEY
'Grams : "Malleable" Keighley. 'Phone : Keighley 3749 (2 lines)

Steady and Strong...

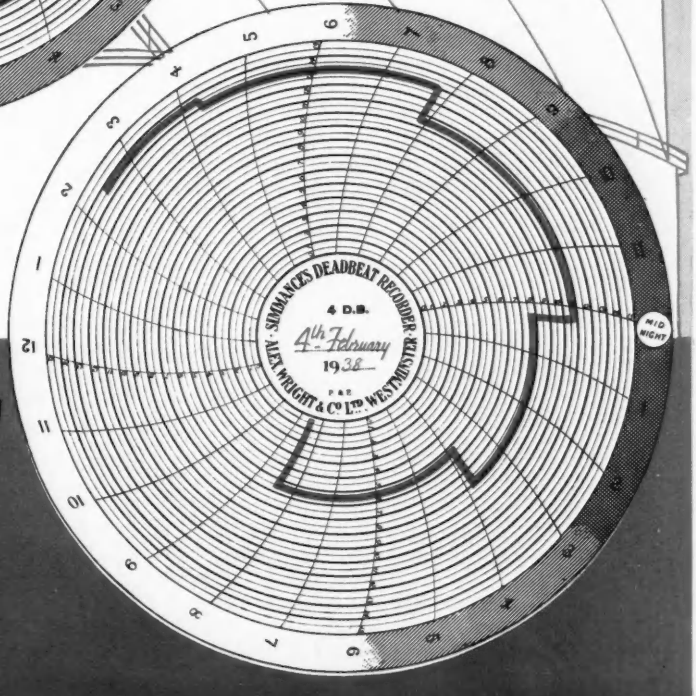
RECORDED EVIDENCE OF PRESSURE READINGS ON TEST OF ALL-WELDED SPIRAL GUIDED GASHOLDER OF 2,000,000 CU. FT. CAPACITY



The illustrations are reproductions of the Pressure Reading Charts for the Air Tests on an All-Welded Four Lift Spiral Guided Gasholder, capacity 2 million cubic feet.

It will be observed that the Pressure Lines for each lift are perfectly true, proving that whilst the Holder was guided firmly in position, there was no binding in the Carriages although the tests were made during a gale.

The carriages fitted to this Holder were of the "Hollis" Patented Self-Adjusting and Self-Lubricating Type.



OXLEY

ENGINEERING CO., LTD

HUNSLET • LEEDS • 10

Tel.: 27468 (3 lines). *'Grams:* "Oxbros, Leeds."

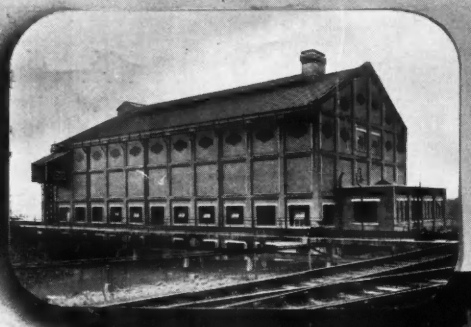
London Office:

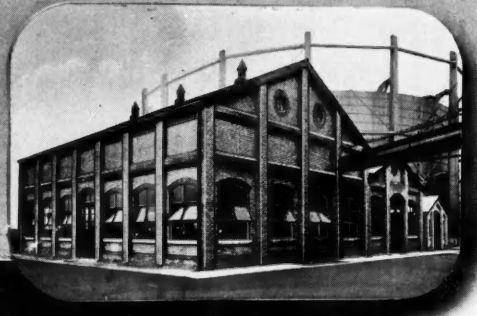
WINCHESTER HOUSE, OLD BROAD ST., E.C.2

RB P.1

GIBBONS

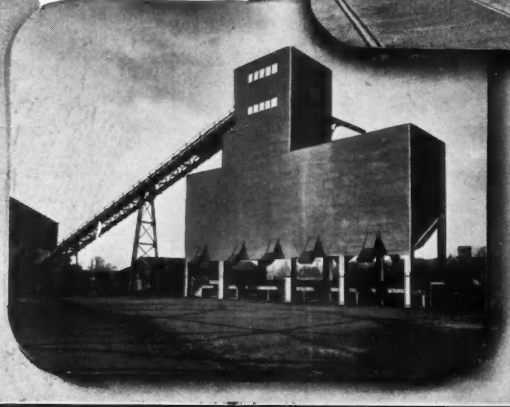
GAS AND CONSTRUCTIONAL ENGINEERS

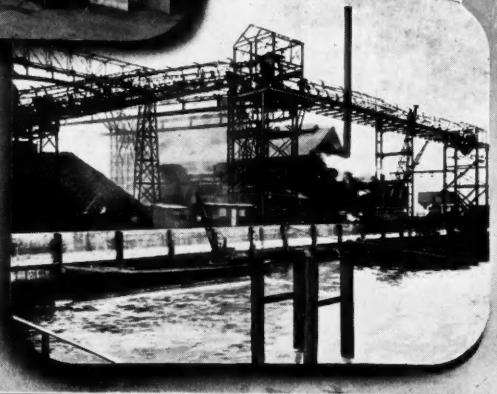




- MODERN COAL CARBONISING PLANTS
- INDUSTRIAL FURNACES AND HEAT TREATMENT
- CONSTRUCTIONAL STEELWORK
- FACTORY BUILDINGS

- COAL AND COKE HANDLING PLANTS
- STORAGE BUNKERS AND GRADING PLANTS
- CHARGING AND DISCHARGING MACHINERY
- REINFORCED CONCRETE FOUNDATIONS





GIBBONS BROS., LIMITED,

DIBDALE WORKS, DUDLEY

Telephone : DUDLEY 3141 (P.A.B.X.) Telegrams : "GIBBONS, LOWER GORNAL."

LONDON OFFICE: 151-4, PALACE CHAMBERS, WESTMINSTER, S.W.1

TELEPHONE : WHITEHALL 6417 – 8

The New Whessoe High Efficiency VERTICAL Condenser

(PATENT APPLIED FOR)

HIGH EFFICIENCY — because the heat-transfer approaches the true cross-flow co-efficient.

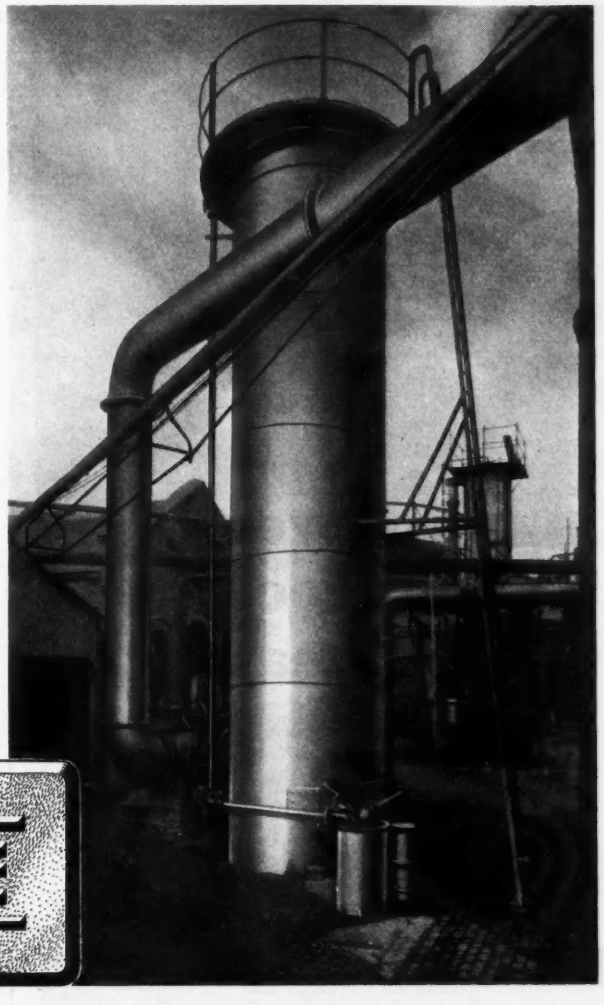
CYLINDRICAL — for withstanding suction or pressure without stiffeners.

MULTI-PASS — for high gas velocities which with —

COUNTER-CURRENT — and —

CROSS GAS FLOW — results in the reduction of cooling surface, and hence of capital cost, to a minimum.

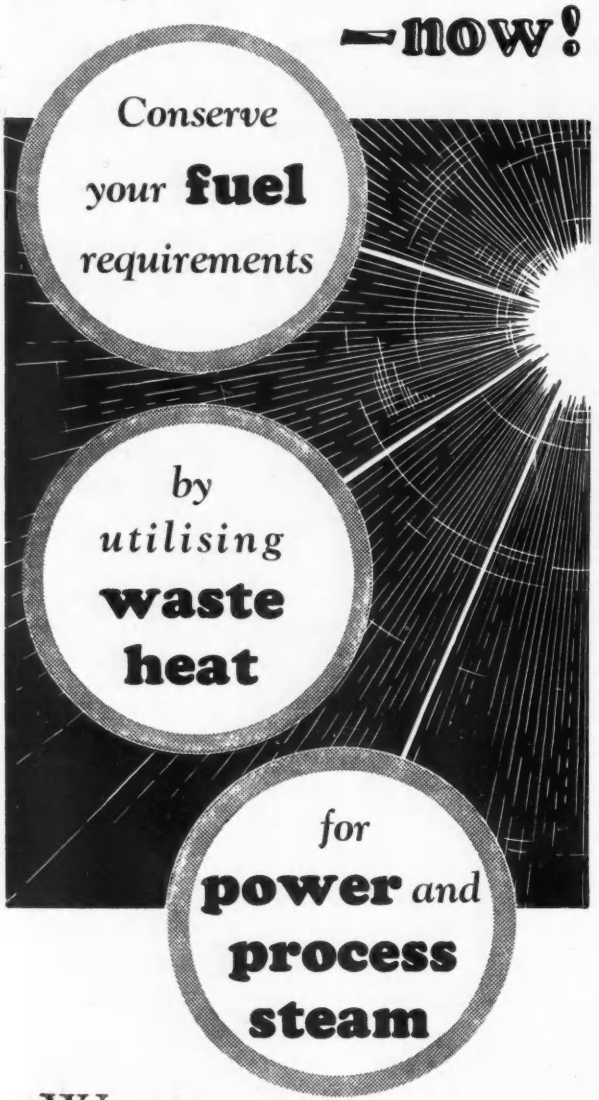
VERTICAL WATER TUBE—for ease of inspection, cleaning and maintenance without necessitating removal of cover plates and the closing of gas and water valves.



WHESSOE

THE WHESSOE FOUNDRY & ENGINEERING COMPANY, LIMITED, DARLINGTON AND LONDON

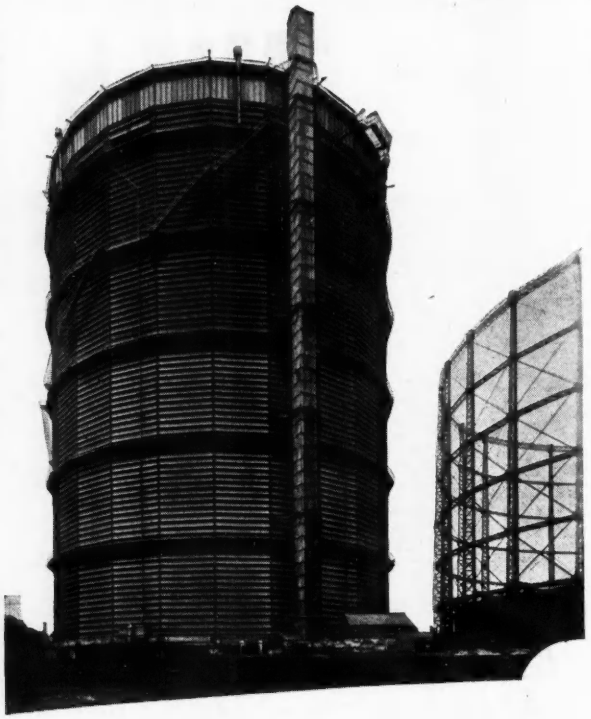
Waste heat recovery is of even greater importance —now!



WE particularly draw the attention of all Gas Engineers to the need for fuel conservation — making a better case than ever for waste heat recovery — and we are at your service for the preparation of schemes with this end in view.

SPENCER-BONECOURT LTD.
CAMBRIDGE ROAD, HITCHIN, HERTS. Tel: Hitchin 907

National Safety-



and Protection for your Holders

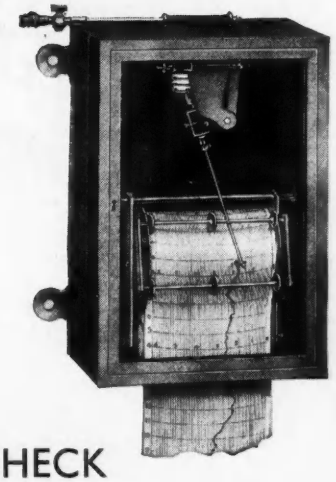
While considering this year's maintenance painting programme, it should be remembered that making your Holders and other plant inconspicuous by treating them in a camouflage scheme which will harmonise with the immediate surroundings is a positive contribution towards national safety.

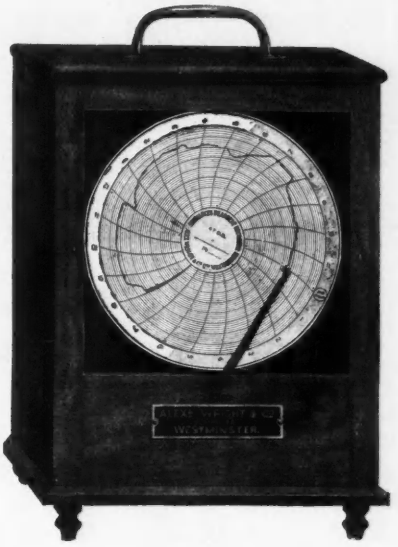
Furthermore, by using "FOOCHOW" CAMOUFLAGE PAINTS the full protection of your plant is just as assured as in former years, because in these paints, which fully conform to Government specification, the non-reflective properties are obtained by careful choice of pigments and special flatting agents and not by a reduction of the Linseed Oil content—the protective and water-proofing element in the paint.

ALSO—These paints, being rust inhibitive, provide a trouble-free basis for future painting.

"Foochow"
CAMOUFLAGE PAINTS

DONALD MACPHERSON & CO., LTD.
21, Albion Street, Manchester, 1, and Mitcham, London





CONSTANT CHECK ON ALL RELEVANT FACTORS

preferably by recordings, assist both operatives and management to maintain effective control of processes, production and distribution of gas supplies.

SIMMANCE PATENT "DEAD-BEAT" RECORDERS and other instruments are of proved reliability and accuracy.

Types and ranges cover most requirements for gasworks, coke ovens, and similar coal and gas processing plants.

CALORIMETERS — GRAVITOMETERS — GAUGES — TEST METERS
GAS ANALYSIS APPARATUS—CO_2 RECORDERS — THERMOMETERS
AERATION TEST BURNERS — GAS TESTING AND RECORDING
INSTRUMENTS AND APPARATUS TO SPECIFICATIONS

ALEXANDER WRIGHT & CO., LTD., WESTMINSTER, S.W.1.

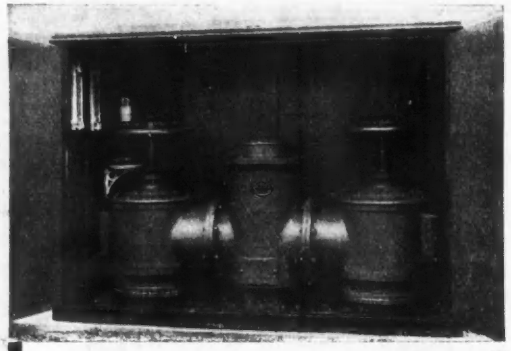


Fig. 321.

PRESSURE-RATIOS of 30-1
with Safety

Above is a set of Peebles' 15" Mercurial Governor and angle pattern inlet and outlet valves housed in steel kiosk and fitted with pressure and recording gauges, supplied to a well-known Gas Undertaking. Inlet pressure is 50"; outlet pressure 2½-6".

The set shown in Fig. 59 is for much higher pressures and consists of two governors in tandem, and duplicate. The first is a diaphragm governor for breaking down the high inlet pressure, which then passes through the mercurial governor for the final delicate low pressure required.

Both governors have "balanced" valves fitted in a removable valve cage which can be withdrawn for cleaning without breaking any joints. Pressures may be varied by weights, air or gas pressure from a distance, or by clock control.

We have sizes and types for all pressures.

Peebles
HP GAS GOVERNORS

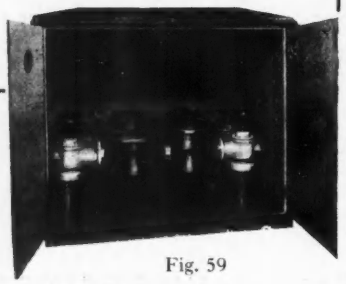
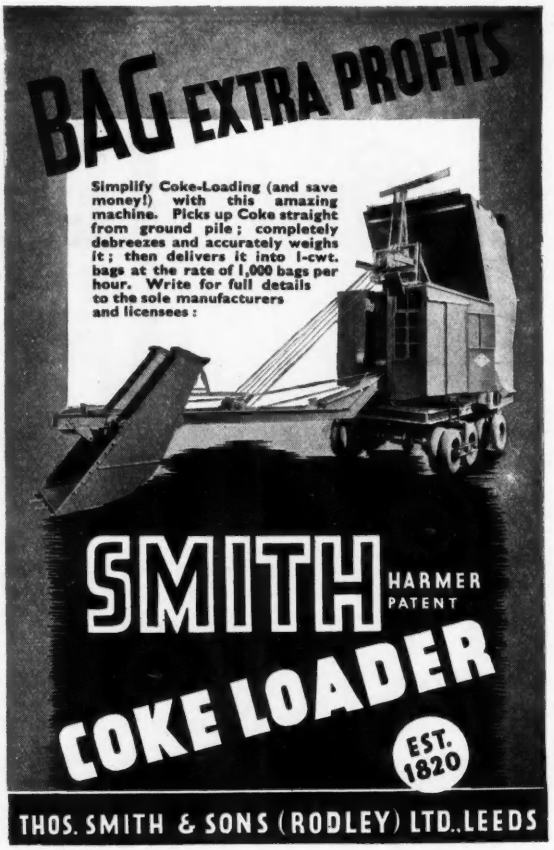
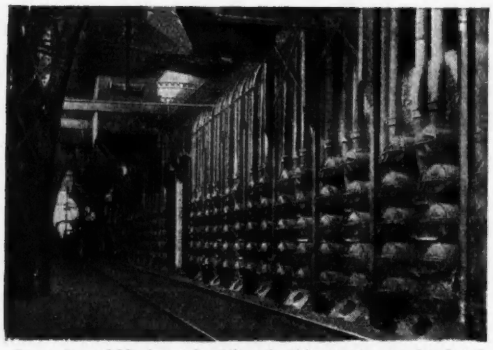


Fig. 59

PEEBLES & CO. LTD.
Tay Works - Bonnington - Edinburgh


BAG EXTRA PROFITS
Simplify Coke-Loading (and save money!) with this amazing machine. Picks up Coke straight from ground pile; completely debreezes and accurately weighs it; then delivers it into 1-cwt. bags at the rate of 1,000 bags per hour. Write for full details to the sole manufacturers and licensees:
SMITH
HARMER PATENT
COKE LOADER
EST. 1820
THOS. SMITH & SONS (RODLEY) LTD., LEEDS

The DERBYSHIRE SILICA FIREBRICK Co. LTD.
FRIDEN, HARTINGTON,
Near BUXTON



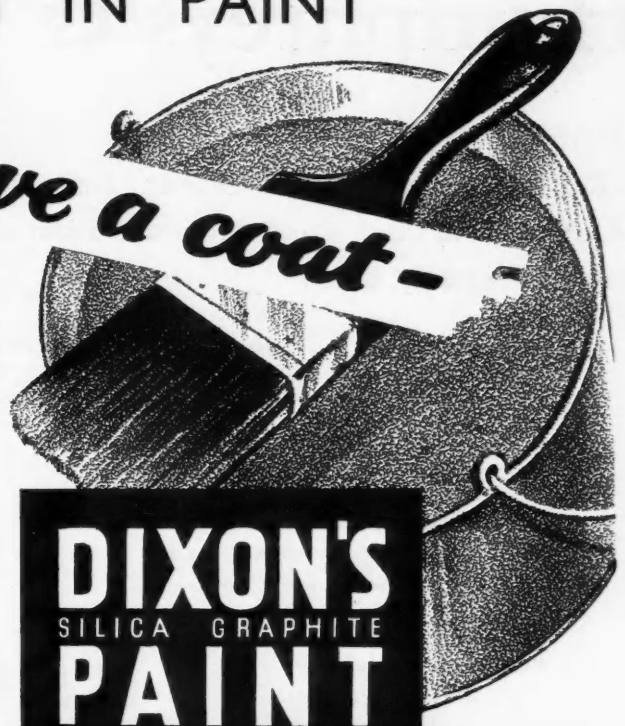
A number of Horizontal settings in this country are insulated with Dome Brand Insulating Bricks.

Manufacturers of Highest Grade
Silica & Siliceous Refractories
for
Vertical & Horizontal Settings
also
"Dome" Brand Insulating Bricks

Telephone: Hartington 30. Telegrams: Silica, Friden, Hartington

WAR ECONOMY IN PAINT

FULL PROTECTION AGAINST CORROSION BY USING 2 COATS ONLY OF DIXON'S SILICA-GRAPHITE PAINT



For the protection of iron and steel from corrosion nobody denies that on new work three coats are better than two. But where conservation of material is necessary owing to the exigencies of war, adequate protection *should* be obtained by using two coats of best-quality paint. If you use one priming coat of Dixon's Red Lead Graphite, followed by Dixon's Natural or Battleship Grey or any other of our Silica-Graphite Paints, full protection **will** be ensured for the longest possible period.

In addition, labour costs are considerably lower because it is so much easier to apply. Any contractor or user of Dixon's Paints will bear this out.

For old work—a touch up with Dixon's Red Lead Graphite Primer, followed by a finishing coat of any of our Silica-Graphite Paints will give the best possible protection over the longest period at the minimum cost.

Write or Phone to

C. R. AVERILL, LTD.

22 Duchy St., Stamford St., London, S.E.1.

Telephone : Waterloo 4732/3. Telegrams : "Crucigraph, Sedist, London."

DIXON'S SILICA GRAPHITE PAINT

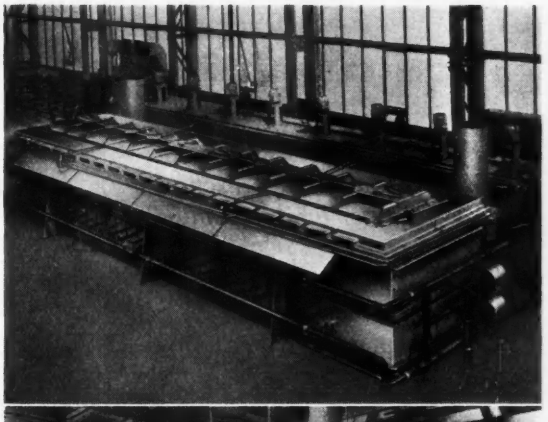
THE CHEAPEST PAINT PER YEAR OF SERVICE

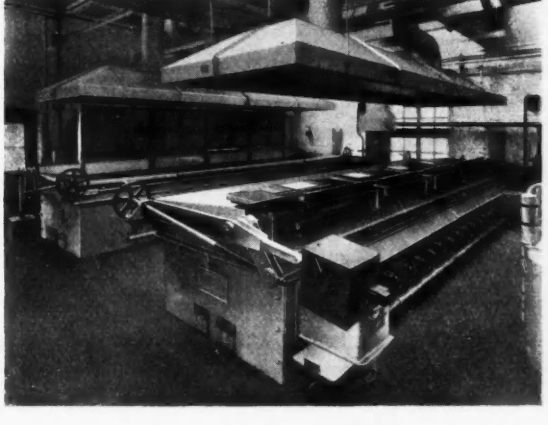
Salt Bath Treatment

We are designers and manufacturers of salt baths of all sizes, from giant 35-tons salt capacity units to small circular baths with pots 7⅛ ins. diameter by 10 ins. deep. Incandescent Salt Baths are widely used throughout the Aircraft and Allied Industries for the treatment of light alloys in the form of rolled sheet and large presswork; airframes, extruded sections, strips and bars; fabricated frames, sheets and pressings; tubes and rods; components, stampings and rivets.

Two recent installations are illustrated on the right:—(Above) Two-stage town gas-fired Salt Bath, with inside dimensions 26 ft. 9 ins. long x 3 ft. 6 ins. deep x 3 ft. wide. (Below) These units are each 15 ft. 6 ins. long x 2 ft. 3 ins. deep x 2 ft. wide, and are fitted with underground flue systems. Covers are of the hinged type.

Details of the complete range of Incandescent Salt Bath Units are contained in booklet No. K/G11, and a copy of this publication will be gladly forwarded on request.





INCANDESCENT Heat Co. LTD

CORNWALL ROAD • SMETHWICK • BIRMINGHAM •

Humphreys & Glasgow Ltd.

Humphreys & Glasgow Ltd. and Associates have been responsible, they believe, for every important Improvement in Carburetted-Water-Gas Manufacture, since the first exploitation of the original Lowe Master-Process now universally used.

Such Improvements include:—

Complete Reverse-Make System; *Residual Gas Purging System;*

Safety Interlocking Valve and Vent System; *Soft Coal and Blow-Run in C-W-G Generators;*

All useful developments in Primary Blasting Processes and New System of Secondary Combustion—including Turbo-Blowers; *All useful developments in Carburetting Processes and Vessels, beginning with the Double-Superheater System and culminating in efficient Gasification of heavy fuel oil, tar, creosote, and effluent liquor;*

First Waste-Heat Boiler in any gasworks culminating in Self-Steaming C-W-G Plant;

H & G Water-Gas Plant 1940

Back Run Processes;

Self-Operating System; *Scientific Control Appliances;*

Self-Charging and Screening System; *Dust Intercepting Blast Products Coolers;*

Dry-Sealed Mechanical Generators, including discharge of clinker while gasmaking; *Automatic Synchronization of Gas Production with multiple Units;*

Water-Sealed Self-Clinkering Generators; *Exhaust-Steam for Generator Steaming;*

Complete Gasification in C-W-G Generators, including Motorless Circulation; *Reforming Rich Gases, Producing Synthesis Gases and Special Gases;*

All useful improvements in Operating Technique;

and Humphreys & Glasgow and Associates have never been more active than now in their ceaseless struggle toward perfection.

Temporary Address:

Winkfield Manor, Ascot, Berks.

CONTENTS

EDITORIAL NOTES.

Control of Iron Castings 657
Stocking Coke 657
Standardization 658
Wartime Street Lighting 658

Forthcoming Engagements 658
Revised Schedule of Reserved Occupations ... 658
B.B.C. Cookery Talks 658
Personal 659
Institution of Gas Engineers Medallists 659
B.C.G.A. Personnel 659
News of the Week 659

Encouraging Figures from Cambridge 659
Family Recipes for Wartime 659
"Protect Your Homes" Exhibition 660
Luxury Hotel Relies on Gas 660
Gas Meter Testing in Birmingham 661
Newcastle-upon-Tyne and Gateshead Gas Bill ... 661

INSTITUTION OF GAS ENGINEERS

Written Contributions to the Discussion on the June Institution Papers :

COMMUNICATION No. 230—Blackpool New Gas-Works. (By T. R. Cook) ... 662

COMMUNICATION No. 231—Economics of By-Products Recovery. (By D. M. Henshaw and C. Cooper) 662

COMMUNICATION No. 232—Gas Meters. (By J. T. Haynes) 666

COMMUNICATION No. 233—Reactive Gas Coke by Alkali Activation. (By H. H. Thomas and P. J. Askey) 671

Gas Liquor Distillation—Reprinted from the "Journal of the Society of Chemical Industry." By F. H. Peakin 672

Trade News 674

Gas Undertakings' Results 675

Trading Results :—
John Brown & Co. 675
Whessoe Foundry 675

Gas Products Prices 675

Gas Stocks and Shares 677

Stock and Share Lists 677-678

TERMS OF SUBSCRIPTION.—*United Kingdom and Ireland : Advance Rate 35/- per annum ; 18/- per half year. Credit Rate : 40/- per annum ; 21/- per half year. Dominions and Colonies and United States : 35/- per annum, in advance. Other Countries in the Postal Union, 40/- per annum, in advance. A copy of the "G.J." Calendar and Directory is presented to continuous subscribers.*

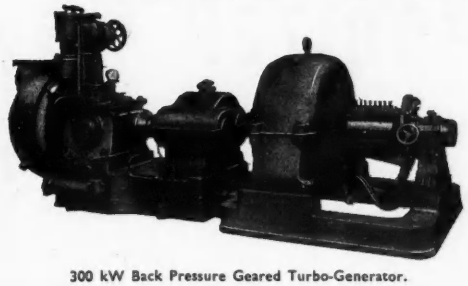
CLASSIFIED ADVERTISEMENTS.—*Situations Wanted, 6d. a line (minimum 3/-, about 36 words). Situations Vacant, Plant for Sale and Wanted Contracts, Public Notices, Educational, &c., 9d. a line (minimum 4/6). Financial Notices, 1/- per line. Box Number, 6d. extra. WALTER KING, LTD. 11, Bolt Court, Fleet Street, London, E.C.4. Telephone : Central 2236-7-8. Telegrams : Gasking, Fleet, London.*

Advertisement Index, see p. 678.

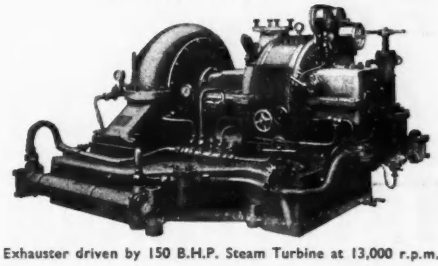
BROTHERHOOD
STEAM TURBINES FOR GASWORKS

Our Turbines, made for all powers up to 15,000 B.H.P. and for all conditions of service, are installed for driving Exhausters, Boosters, and Generators in many Gas Works, including:—

The Gas Light & Coke Co., South Suburban Gas Co., Wandsworth & District Gas Co., and in Works of Corporations and Companies at—Birmingham, Bristol, Coventry, Cardiff, Exeter, Liverpool, Manchester, Newcastle-on-Tyne, Preston, Portsmouth, Sheffield, Smethwick, Toronto, etc.



300 kW Back Pressure Geared Turbo-Generator.



Exhauster driven by 150 B.H.P. Steam Turbine at 13,000 r.p.m.

Brotherhood plant for Gas Works also includes Reciprocating Boosters, Water Cooling Towers, Air and Gas Compressors for all pressures and capacities.

PETER BROTHERHOOD LTD.

PETERBOROUGH :: Branch Offices in LONDON, LEEDS, MANCHESTER and GLASGOW

for

the finest

industrial meters

THOMAS GLOVER & Co. LTD.

EDMONTON, LONDON, N.18 AND BRANCHES

PARKINSON

PETROLEUM VAPORIZER

FOR ALL

Parkinson's petroleum vaporizers produce an oil fog that carries through mains services and meters.

This is the satisfactory way to prevent naphthalene deposits and internal corrosion, and to preserve all meters.

Write for full details and prices.

NAPHTHALENE TROUBLE

W. PARKINSON & CO.

(INCORPORATED IN PARKINSON & COWAN (GAS METERS) LIMITED)

COTTAGE LANE WORKS, CITY ROAD, LONDON, E.C.1 — IRON LANE, STECHFORD, BIRMINGHAM, 9. — RAPHAEL ST. WORKS, CROMAC STREET, BELFAST.

BENZOLE . . .

THE country needs more benzole for chemical purposes and for motor spirit. Apart from the additional quantity which can be obtained from carbonising plants not now stripping, there are many directions in which all might look to ensure maximum production.

Among these may be mentioned the following :—

1. The employment of *total* stripping on those plants now practising only partial recovery.
2. The maintenance of wash oil in good absorptive condition as regards distillation range, viscosity and freedom from deposits.
3. The circulation of adequate quantities of wash oil at all times and especially with a view to compensating for varying atmospheric conditions.
4. The close control of the temperatures of the contacting gas and wash oil.
5. The effective stripping of the absorbing oil to maintain a uniformly high level of recovery from the gas.
6. The provision of adequate supplies of cold water for condensing and cooling purposes.
7. The full use of all modern developments leading to the enhancement of the yield of motor fuel, e.g., the efficient removal of organic sulphur and by this means the avoidance of heavy chemical washing, conserving unsaturated hydrocarbons in which gum formation can be inhibited.
8. The acceptance by the distributors of all benzole homologues which, in the relative absence of toluene, can be usefully incorporated in motor fuel.
9. The use of efficient and flexible fractionating equipment with completely controllable reflux system to provide the maximum yields of pure products at each distillation, thus eliminating the unnecessary recycling of intermediates with attendant distillation losses.

W-D BECKER OVEN PLANTS in this Country are producing annually upwards of 24,000,000 GALLONS OF CRUDE BENZOLE expressed as 65% at 120°C.

W-D

THE WOODALL-DUCKHAM VERTICAL RETORT AND OVEN CONSTRUCTION CO. (1920) LTD

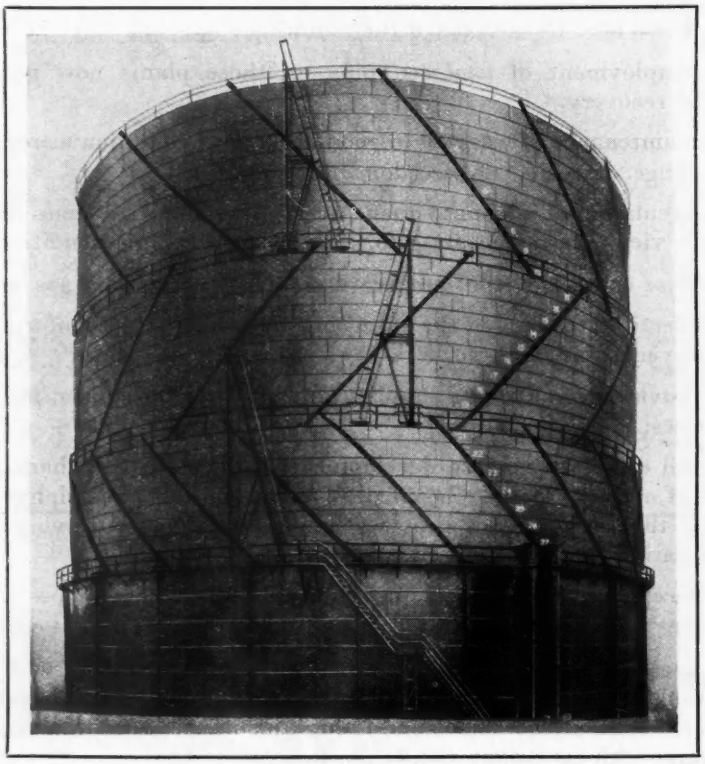
Temporary Address:

UPLANDS · EPSOM ROAD · GUILDFORD

Members of the Society of British Gas Industries

Telephone : Guildford 3301 (5 lines). Telegrams : Retortical, Guildford

GASHOLDERS



STEEL TANK	... 149 ft. 7½ ins. dia., 33 ft. 2 ins. deep
INNER LIFT	... 141 ft. 6 ins. dia., 32 ft. 6 ins. deep
MIDDLE LIFT	... 144 ft. 6 ins. dia., 32 ft. 6 ins. deep
OUTER LIFT	... 147½ft. 6 ins. dia., 32 ft. 6 ins. deep
CAPACITY	... 1,500,000 cubic feet.

MANUFACTURED AND ERECTED BY

ROBERT DEMPSTER & SONS, LTD.

Wire: "DEMPSTER" ELLAND

ELLAND

'Phone: ELLAND 2241, 2242, 2243

LONDON OFFICE: 16, Queen Anne's Gate, Westminster, S.W.1
Wire: "ELLANDORS, PARL, LONDON." 'Phone: Whitehall 2661

THE DELIGHT OF THE NATION'S HOUSEWIVES!

First in the field and still unsurpassed, the Parkinson "Renown" has won pride of place in the estimation of the consumer. Indeed, in these ration times it has become, by virtue of its perfect cooking qualities, the choice of the nation's housewives.

THE PARKINSON STOVE CO. LTD.
BIRMINGHAM, 9

London Showrooms :—
Terminal House, Grosvenor Gardens, S.W.1
MEMBER OF THE SOCIETY OF BRITISH GAS INDUSTRIES

The Parkinson
RENOWN
GAS COOKER

Large Sc

1. The Tiffin County Girls' School. Radiation app ances supplied to Surrey County Council.
2. Canteen Kitchen of Spratt's Patent Ltd. Radiati Equipment installed by the Commercial G Company.
3. A County Mental Hospital. Radiation apparat installed by The Brightside Foundry & Engineeri Co. who also made and installed a number of stea heated appliances.
4. An Industrial Canteen. Kitchen planned by t local Gas Dept.
5. Another County school for Girls—Photograph courtesy of the Surrey County Council.

RADIATION LTD.

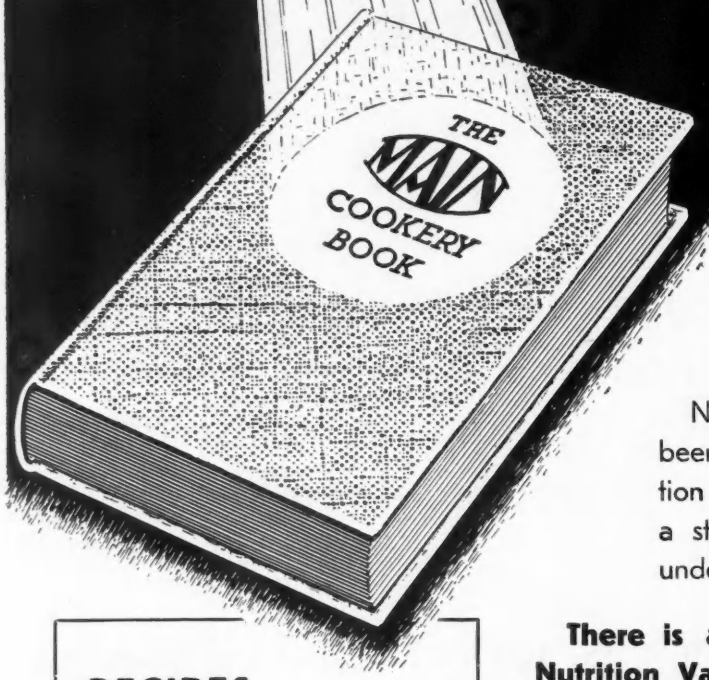
Scale Equipment

For bulk catering to meet the present emergency conditions the wide experience of Radiation Ltd. in design and in construction enables them to offer their specialised knowledge to all Undertakings with problems to solve.

Whether the enquiry is for complete cooking apparatus and accessories for Canteens, Hospitals, Barracks, Evacuation Camps, etc., or for such appliances as A.R.P. boilers, Storage water heaters or Decontamination appliances, this knowledge and experience are at your service.

Radiation

MORE LIGHT ON COOKING by GAS



The newly-issued 48th Edition of the Main Cookery Book has been completely revised, remodelled and enlarged.

New Sections of Recipes have been added, and much useful information is embodied which will provide a store of good advice on cooking under present-day conditions.

There is a Section dealing with the Nutrition Value and Selection of Foods, and a Table of Edible Organic Nutrients, Mineral Elements, and Vitamin Indications of many varieties of Foodstuffs.

The book is bound in Washable Cloth and the pages lie flat wherever the book is opened.

RECIPES

Hors d'Oeuvres—Soups—Fish Dishes—Meat—Game and Poultry—Réchauffés Vegetables and Salads—Sauces and Forcemeats—Puddings—Savoury Dishes, Egg Dishes and Sandwich Fillings—Pastry—Bread, Scones, Cakes and Biscuits—Icings, Sweets and Cake Fillings—Invalid Cookery—Fruit Bottling and Preserving—Home-made Wines—Miscellaneous—Whole Dinner Menus.

NOTES AND HINTS on

Methods of Cooking—COLD-OVEN-START COOKERY—Gas Economy—Economy in Cooking, etc., etc., and a useful FOOD CALENDAR.

The Enlarged MAIN COOKERY BOOK

RETAIL 2/6 PRICE

48th Edition
Demy 8vo. 336 pages.

Published by R. & A. MAIN LIMITED, LONDON AND FALKIRK

T.U.C. backs War Savings

Declaration by the General Council of the Trades Union Congress

" The General Council of the Trades Union Congress have given their most careful consideration to the problem of how to provide the means of carrying on the War with the least hardship to the population as a whole and, in particular, to workpeople.

" As a result, the General Council were anxious to give their full and strong support to voluntary savings, but considered it necessary to seek assurances :

(*a*) **From the Government** that the voluntary war savings of workpeople up to a specified amount would be disregarded in the application of any Means Test to which they might, in the future, become subject.

(*b*) **From Employers** that they would undertake not to use evidence of the ability of workpeople to save as an argument against applications for wage advances.

" Both these assurances have now been given. For the Government, Sir John Simon announced in his Budget statement that new savings during the war up to £375, invested in National Savings Certificates, Defence Bonds, subscriptions to new War Loans, or deposited in the Post Office Savings Bank or the Trustee Savings Banks *would be disregarded in computing the means of applicants for unemployment assistance or supplementary old age pensions.*

" The Employers have also given a definite assurance that *the war savings of workpeople will not be used against the Trade Unions in subsequent negotiations for wage increases.*

" The Trades Union Congress, recognising the magnitude of the war's financial and economic problems, **urge upon all who are able to save to do so to the utmost of their ability and to lend such savings to the country.**

" These savings will help materially to maintain supplies essential for the adequate equipment of the fighting and defence services.

" Savings, in so far as they help to restrict expenditure upon non-essential commodities, will also **assist to maintain the supply and prevent increases in the price of commodities essential to the people's standard of life."**

ISSUED BY THE NATIONAL SAVINGS COMMITTEE

The "A & M" OPTIONAL METER

I.G.E. D.1

Two types are offered—the straight single coin Disc-change for pennies or shillings only and the new D.S. Optional with or without Dual Coin adjustment. This mechanism can be set for pennies only, shillings only, or pennies and shillings at the consumer's option. Accuracy, simplicity and durability are the characteristics of both these attachments.

ALDER & MACKAY LTD.

EDINBURGH - LONDON - BRADFORD & BRANCHES

We Specialise in . .

GAS COALS

THE NEW BOWSON COAL CO.
COLLIERY AGENTS, SHIPPERS and CONTRACTORS
CINDERFORD, Glos.
Telegrams - "BOWSON CINDERFORD"

COMPRESSORS & EXHAUSTERS FOR AIR AND GAS.
See our Advertisement Next Week.
REAVELL & CO. LTD. IPSWICH.

CASES
For Binding Quarterly Volumes of the "GAS JOURNAL."

Walter King, Ltd., "Gas Journal" Offices, 11, Bolt Court, Fleet Street, London, E.C.4.

THEORY OF INDUSTRIAL GAS HEATING

By PETER LLOYD, B.A.Cantab., A.I.C.

172 pp., Demy 8vo; 49 Diagrams.

Price 7/6 per copy.

12 copies 75/- to one address

●

WALTER KING LTD.,
11, BOLT COURT,
FLEET STREET, LONDON, E.C.4

60% Sulphur absorbed by our

OXIDE

which has stood the test of 60 years

Minimum Costs, Highest Efficiency

ESTABLISHED 1873

GAS PURIFICATION & CHEMICAL COMPANY LIMITED

PALMERSTON HOUSE, 34, OLD BROAD STREET LONDON, E.C.2.

Telegrams: "Purification, Stock London." Telephone: London Wall 5077

PUBLICATIONS.

GAS ACCOUNT CALCULATORS

SUPPLIED either by Price per Therm or Thousand, for any specified Calorific Value, in book form, office charts, or pocket charts for Meter Inspectors, printed in clear type. Write for particulars to F. H. WAKELIN LTD., Calculator Specialists, 354, WHEELER STREET, BIRMINGHAM.
'Phone: Northern 0989. 'Grams: Reckoners, B'ham.

TROTTER, HAINES & CORBETT LIMITED

FIRE-CLAY & BRICKWORKS

STOURBRIDGE

GAS RETORTS in BEST STOURBRIDGE QUALITY also SILICIOUS QUALITY 81% SILICA

HIGH GRADE INSULATING QUALITY FIREBRICKS

REGENERATIVE TUBES & TILES

PLANT, &c.

ROBERT DEMPSTER & SONS, LTD., ELLAND, Builders of CARBONIZING PLANTS, both Horizontal and Vertical. Manufacturers of CONDENSERS, PURIFIERS, GASHOLDERS, &c., also every description of COAL and COKE HANDLING PLANT. *Telegrams:* "Dempster, Elland." *Telephone:* Elland 2241, 2242 and 2243.

FIRTH BLAKELEY, SONS, & CO., LTD., Vulcan Ironworks, Church Fenton, Tadcaster, Yorks.,

MANUFACTURERS of Gasholders, Tanks, Condensers, Purifiers, Scrubbers, Washers, and every description of Gas Plant.
Sole Makers of the "P.M" semi-water Gas Plant.
Telegrams: "Blakeleys, Church Fenton."
Telephone: Barkston Ash 234 and 235 (Private Branch Exchange). Code: "Bentleys."

PATENTS.

MEWBURN, ELLIS & CO.,

CHARTERED PATENT AGENTS

AND TRADE MARK AGENTS

70 & 72, Chancery Lane, London, W.C.2.

Telegrams: "Patent, London." 'Phone: Holborn 0497

And 3, St. Nicholas Buildings, Newcastle-on-Tyne.

TUFNOL

Regd. Trade Mark

The Material of Unlimited Uses

ELLISON INSULATIONS LTD.
PERRY BARR, BIRMINGHAM, 22

113

"KLEENOFF"

—THE COOKER CLEANER

Tins for Sale to Consumers. In Bulk for Works Use.

OXIDE OF IRON.
SPENT OXIDE BOUGHT.

BALE & CHURCH, LTD.

33, ST. MARY AT HILL, LONDON, E.C.3.

Telephone: Mansion House 1156. *Telegrams:* "Balefire, London."

BROADBENT'S SLAG WOOL

THE WORLD'S FINEST

FIRE-PROOF NON-CONDUCTING

material for

GAS PLANT

of every description

J. C. BROADBENT & Co., LTD.

SLAG WOOL WORKS, REDCAR, YORKS
38, BASINGHALL ST. LONDON, E.C.2

STRACHAN & HENSHAW LTD.

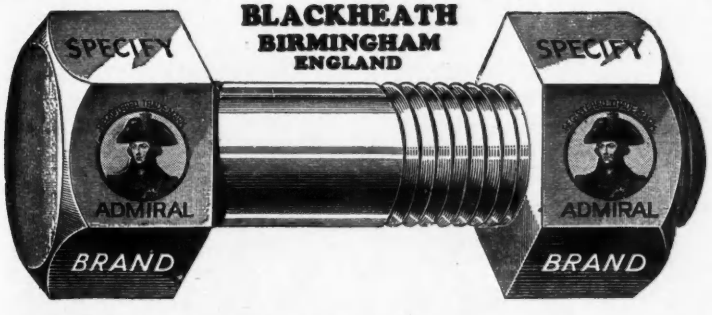
BRISTOL.

MANUFACTURERS and CONTRACTORS for

HANDLING PLANT

SCREENS, TIPPLERS, ETC.

Thos. Wm. Lench, Ltd.



MAKERS OF

BOLTS
SCREWS
RIVETS

FOR ALL TRADES

WALSALL LOCKS & CART GEAR LTD. NEALE STREET WALSALL

METER LOCKS *ALL TYPES*

WE INVITE YOUR ENQUIRIES

PLANT &c. (Second Hand) FOR SALE & WANTED

PHONE: 98 STAINES.

FOR SALE—Cochran Boiler, 9 ft. 6 in. by 4 ft. 3 in., 100 lb. w.p.: Greenwood & Batley 20 kW. 220 v. D.C. Steam Turbo: 4 in. Pulsometer Turney Steam Turbo Pump: C.I. Sectional Tar Tank, 13 ft. by 6 ft. diameter: Stothert & Pitt 4 in. Rotary Pump.

HARRY H. GARDAM & CO., LTD., STAINES.

WANTED—Six 18 in. Gas Valves. Particulars to No. 9054, "GAS JOURNAL," 11, BOLT COURT, FLEET STREET, E.C.4.

WANTED — Second-hand Direct-coupled STEAM TURBINE and CENTRIFUGAL BLOWING UNITS. 10-25 H.P. Write No. 9055, "GAS JOURNAL," 11, BOLT COURT, FLEET STREET, E.C.4.

COMPANY NOTICES

COMMERCIAL GAS COMPANY

NOTICE is Hereby Given that the Transfer Books of this Company, so far as they relate to Ordinary Stock, WILL BE CLOSED from the 6th July to 5th August, both days inclusive.

By Order of the Board,
E. H. HARMAN,
Secretary.

Offices, Stepney, E.1.
June 21, 1940.

SOUTH SUBURBAN GAS COMPANY

NOTICE is Hereby Given that the Transfer Books relating to the Ordinary and Preference Stocks of this Company WILL BE CLOSED from the 5th July to 18th July, both days inclusive.

By Order of the Board,
T. BROWN, General Manager and Secretary.
Chief Office, Lower Sydenham, S.E.26.
June 20, 1940.

APPOINTMENT VACANT

WANTED—Stoker (Shovel Charger). Oxfordshire 17 million works. Apply No. 9056, "GAS JOURNAL," 11, BOLT COURT, FLEET STREET, E.C.4, stating Age, Wages Required and Previous References.

APPOINTMENTS VACANT (continued)

WANTED. — Fully Qualified Coke Oven Manager for Small Battery of New Ovens in Durham. Not over 40 years of age. Good organizer, and had experience of HIGH PRESSURE GAS COMPRESSOR PLANT, Benzole Refinery, etc. Application to be accompanied by copies of two recent testimonials stating age, qualifications, experience and salary required.

No. 9052, "GAS JOURNAL," 11, BOLT COURT, FLEET STREET, E.C.4.

NO. 9038 wishes to thank Applicants and to inform them that the Appointment has now been made.

APPOINTMENT WANTED

GAS Engineer, fully qualified, with 24 years' experience in medium and large size Gas Undertakings, seeks change of appointment either as Assistant Engineer of large undertaking or Managership of medium size undertaking.

No. 9053, "GAS JOURNAL," 11, BOLT COURT, FLEET STREET, E.C.4.

CONTRACTS OPEN

COUNTY BOROUGH OF MIDDLESBROUGH

(GAS DEPARTMENT.)

RE-TUBING WATER TUBE GAS CONDENSER.

THE Gas Committee invite Tenders for Re-Tubing Water Tube Gas Condenser.

Specification and General Conditions of Contract may be had on application to the undersigned. A deposit of £1 1s. 0d., which will be returned on receipt of a bona-fide Tender, must accompany the application. Tenders, in a plain sealed envelope, which must not bear any name or mark indicating the sender, endorsed "Tender for Re-Tubing Water Tube Gas Condenser—Gas Department." are to be sent to the undersigned to reach him not later than 9 a.m. on Friday, 12th July, 1940.

The usual conditions relating to Corporation Contracts will apply.

PRESTON KITCHEN,
Town Clerk.

Municipal Buildings,
Middlesbrough.
June 22, 1940.

PRIORITY

WHY RED CROSS APPEAL TAKES PRECEDENCE

The Red Cross brought order out of chaos on the battlefield. It established that the wounded were to be respected and cared for, that military hospitals were not to be fired on, that nurses and doctors were to be protected and the lives of prisoners spared.

The Red Cross arranges for the exchange of prisoners, traces missing men, repatriates the badly wounded, visits and reports on internment camps and arranges communication between prisoners and relatives.

Already the Red Cross has spent £300,000 on its great work of mercy.

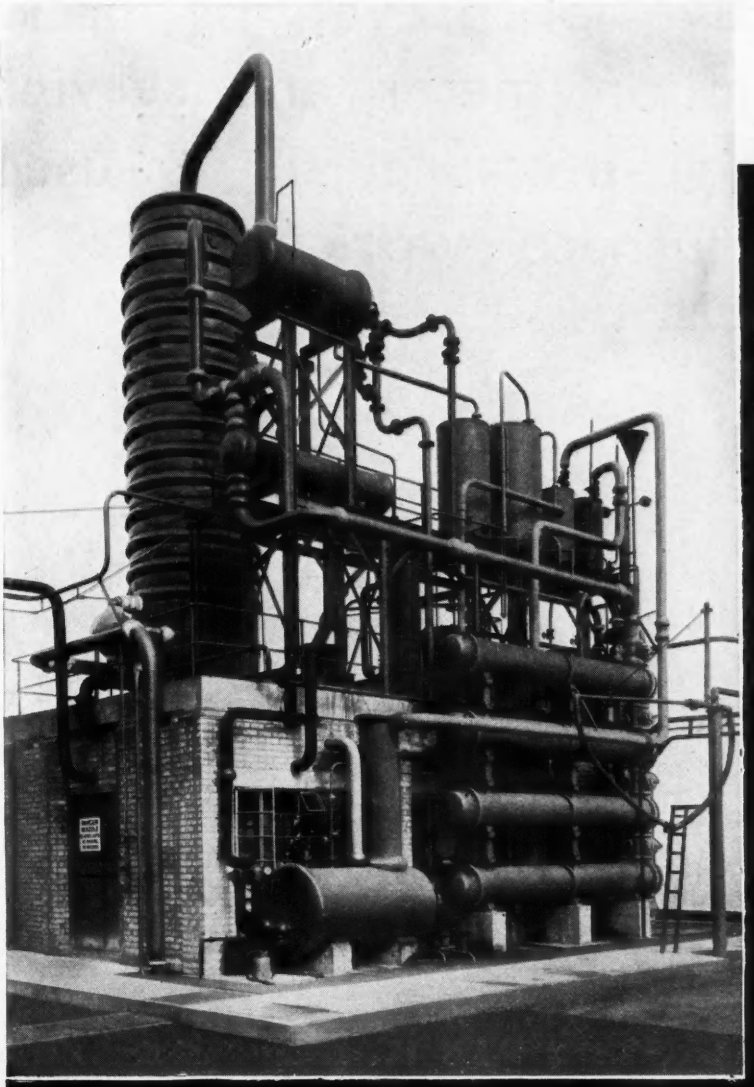
During and as a result of the last War it spent over £21,000,000

Encourage everybody to support The Lord Mayor's Fund, and send donations to The Mansion House, London, E.C.4, or to the Prisoners of War Fund, St. James's Palace, London, S.W.1.

This space has been contributed to the Red Cross by the "Gas Journal."

STANTON

SPUN IRON PIPES



FOUNDED 1850
HOLMES
HUDDERSFIELD

BENZOLE *and* SULPHUR REMOVAL *by the* G·L·C·C *and* HOLMES VACUUM PROCESS

The design of these Plants is covered by Patents granted to the Gas Light & Coke Co., London, and W. C. Holmes & Co. Ltd.

Plants now in operation or under construction, varying in capacity from 750,000 to 12,000,000 cubic feet per day, have proved that organic sulphur compounds can be reduced to . . .

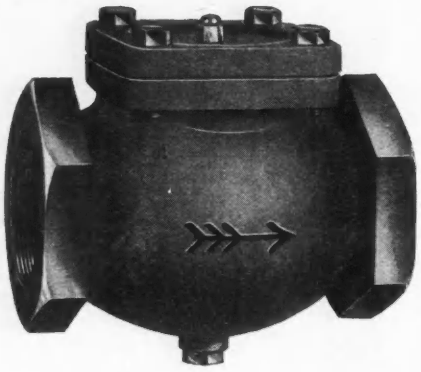
BELOW 10 GRAINS PER 100 CUBIC FEET

W · C · HOLMES & CO. LIMITED

TURNBRIDGE, HUDDERSFIELD & 119 VICTORIA ST. LONDON S.W.1

173

This is the valve for preventing back-pressure of air on meter and service pipes when high-pressure air is used with gas for furnace work, etc. . .



COMPLIES WITH ALL BOARD OF TRADE REGULATIONS.
9 sizes — $\frac{3}{4}$" to 6" inlet and outlet.
FULL PARTICULARS AND PRICES ON REQUEST.

"Keith Blackman"
PATENTED
Back-pressure Valve

KEITH BLACKMAN LTD., MILL MEAD ROAD, LONDON, N.17. T.N.: TOTTENHAM 4522. T.A.: KEITHBLAC, PHONE, LONDON.

Meter and Governor Leathers

DIAPHRAGM'S DEPENDABLE DIAPHRAGMS

have been supplied to all parts of the World since 1847

Cutting-Out Shop where the best part of the skins are cut up by highly skilled men.

Products of the "All-Gas-Powered" Works

The Diaphragm & General Leather Co., Ltd.

Franklin Road Works, PORTSLADE, SUSSEX

Printed by Straker Brothers, Ltd., London, E.C.2, for WALTER KING, LIMITED, 11, BOLT COURT, FLEET STREET, LONDON, E.C.4.—Wednesday, June 26, 1940.